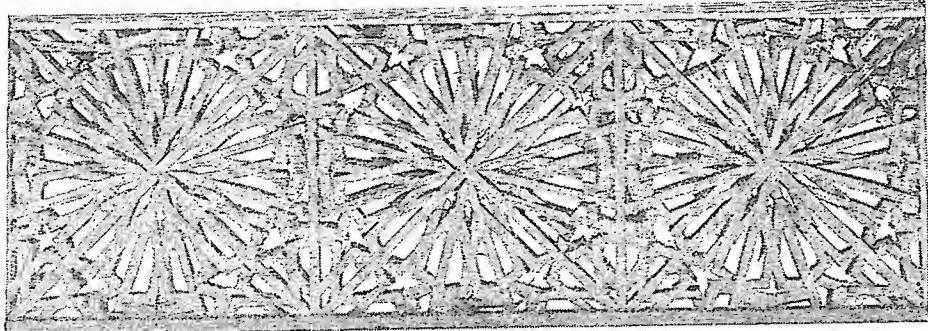


Part III

THE PRESERVATION OF HEALTH

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PREFACE

ON THE CAUSES OF HEALTH AND DISEASE ; THE NECESSITY OF DEATH.

678. In the first part of this book it was stated that Medicine comprises two parts, one theoretical, and one practical, though both are really simply speculative science. That which is specially named "theory" relates to the formation of opinions and the showing of the evidence upon which they are based, without reference to the mode of acting upon them. Thus this part deals with the temperaments, the humours, the faculties ; and with the forms, the symptoms, and the causes of disease. That which is specially named "practical" relates to the mode of acting upon this knowledge, and the prescription of a regimen.

For instance, it is that part of Medicine which helps us to understand how the health of the body is to be maintained in this or that state, and by what means we can heal the diseases with which the body is afflicted. "Practical" does not refer to the performance of surgical operations. It is the *art* which teaches us *in what way* to procure healing—the "healing" art.

Having expounded in the first and second parts of this work the various matters pertaining to this theoretical part of Medicine, we now proceed to the study of the two subjects pertaining to the practical part—dealing with them in a general manner.

The two parts which belong to the practical side of Medicine are (1) The science of regulating the healthy body, so as to maintain it in health. The science of hygiene. (2) The science of ruling the sick body so as to enable it to return to a state of health. The science of healing.

In this part then, the third, we write down fully how the health is to be maintained.

* * * *

679. The human being takes its origin from two things—(1) the male sperm, which plays the part of “factor” ; (2) the female sperm [menstrual blood], which provides the matter.

Each of these is fluid and moist, but there is more wateriness and terrene substance in the female blood and female sperm, whereas air and igneity are predominant in the male sperm. It is essential that at the outset of the congelation of the two components there should be moisture, even though earth and fire are found in the product. The earth provides the firmness and rigidity ; the fire provides the maturative power. These give the coagulum (“He created man from a clot”—Q. 96, 2) a certain hardness or firmness. But this hardness is not as great in degree as that possessed by a stone or metal [or glass]. For these are either not soluble at all or only soluble to a degree imperceptible to our senses, however long one exposes them to solvents. Were the hardness comparable to this, the product of conception would never suffer injury however long or however persistently a solvent were applied. But that is not so. The fact is contrary.

680. Our bodies are exposed to injury from two directions—one exterior and one interior. The interior source of injury is the dissipation of the moisture from which we are created, and this dissipation proceeds in an orderly manner. The second source is the putrefactive breakdown and metamorphosis of the humour, into a form such that the fermentative phenomena of life are no longer able to proceed.

The second source of injury differs from the first in that dryness is here introduced in virtue of *depravity* of humour ; and this dryness continues neutralizing the moisture of the body until the “form” ceases to have a capacity for life.

Finally, the putrefactive breakdown disperses the vitality, because it first destroys the moisture and then disperses it, and simply dry ash is left behind.

681. Hence we see that these two sources of destruction [of the living product of conception] are different from those arising from other causes—such as, freezing cold, torrid heat, grave forms of loss of continuity, various maladies. But it is in regard to the first two-named sources of destruction that we find the more important factors relative to the question of the preservation of health.

Each of them takes origin from extrinsic and intrinsic agents. The extrinsic agents are, e.g., the atmosphere, which is a solvent and putrefacient. The intrinsic agents are, e.g., the

innate heat, which is the agent within us through which moisture is dispersed : the extraneous heat generated within us from the aliments, and through other agents which cause putrefactive changes in the [native] moistures.

All these agents mutually aid one another in rendering the body dry. And yet it is true that our perfection and soundness and the power to perform our various actions depend on a due degree of dryness of the body. But the degree of dryness becomes relatively greater and greater until we die. Hence this dryness is inevitable.

682. If we were at the outset essentially composed of moisture, heat would have to overcome it or else the heat would be choked by it. Therefore the heat continues to exert its own effect,—that is, it produces more and more desiccation. But whatever degree of dryness there might be at the outset (of life), it reaches equilibrium, and remains so until the limit of equilibrium in regard to dryness is reached. The heat remaining constant, the dryness is now [relatively] greater than before ; for the “matter” is less, and hence holds more. Hence it is not difficult to understand that the dryness passes on beyond the stage of equilibrium, and goes on steadily increasing until the whole of the moisture of the body is consumed. Therefore (we may say) that the innate heat is the cause of its own extinction, for it is itself the reason for its own “matter” being consumed. We may compare it to the flame of a lamp ; the light goes out when all the “matter” has been used up.

As the dryness increases, the innate heat diminishes. The loss continues unceasingly till death, and the moisture which is lost is not restored. The loss goes on more and more.

683. The dryness (of the body) is increased in two ways : by lessening of the power of receiving “matter” ; by lessening of the native moisture resulting from dispersal of the (innate) heat. The heat becomes more feeble because dryness predominates in the substance of the members, and because the innate moisture becomes relatively less. The innate moisture is to the innate heat as the oil of a lamp is to the flame. For there are two forms of moisture in the flame : water, which holds its own, and oil, which is used up. So, in a corresponding manner, the innate heat holds its own in respect of the innate moisture, but is used up *pari passu* with increase of extraneous heat, due, e.g., to defective digestion, which is comparable with the aqueous moisture of the flame. As the dryness increases, the innate heat lessens, and the result is natural death.

684. For the reason why the (human) body does not live any longer than it does lies in the fact that the initial innate moisture holds out against being dispersed both by the alien heat and by the heat in the body itself (both that which is innate and that derived from bodily movement). And this resistance is maintained as long as the one is weaker than the other, and as long as something is provided to replace that which has been thus dispersed—to wit, from the aliment. Furthermore, as we have already stated, the power or faculty which operates upon the aliment in order to render it useful in this way only does so up to the end of life.

685. Therefore we may say that the art of maintaining the health is not the art of averting death, or of averting extraneous injuries from the body ; or of securing the utmost longevity possible to the human being. It is concerned with two other things—(a) the prevention of putrefactive breakdown ; (b) the safeguarding of innate moisture from too rapid dissipation, and maintaining it at such a degree of strength that the original type of constitution peculiar to the person shall not change even up to the last moment of life.

This is secured by a suitable regimen, namely (a) one which will ensure the replacement of the innate heat and moisture which are dispersed from the body as exactly as possible ; and (b) a regimen which will prevent any agents which would lead to a rapid dessication from gaining the upper hand—excluding agents which produce a normal desiccation ; (c) one which safeguards the body from the development of putrefactive processes within it and from the influence of alien heat (whether extraneous or intrinsic).

For all bodies have not the same degree of innate moisture and innate heat. There is a great diversity in regard to them.

686. Moreover, every person has his own term of life, during which the desiccation inevitable to his temperament (constitution) and the degree of innate heat, and of innate moisture can be withstood.

687. Nevertheless, factors may arise which assist desiccation, or are injurious in some other way. For which reason, many assert that the former are natural causes of death, whereas the latter are accidental. And under this view, the art of maintaining health consists in guiding the body to its natural span of life by paying attention to whatever things conduce thereto. There are two faculties to be fostered by the doctor in striving for this object : (1) the nutritive faculty, whereby that is replaced which

is constantly being lost to the body—namely earthiness and aquosity ; (2) the sensitive faculty (animal faculty)—that is, the pulsatile faculty which is concerned with the replacement of that which is lost to the body by the breath—namely “air” and igneity. And since aliments are only potentially like the thing nourished, an alterative faculty had to be created so that they could be changed actually into the likeness of the thing nourished. In this way the aliment becomes effective.

The instruments and channels necessary for this had to be created also—namely the means by which material is attracted, expelled, retained, and digested (sequence by sequence, turn by turn).

688. Therefore we may say that the essential considerations in the art of preserving the health consist in maintaining equilibrium between all these various concomitant factors. But there are seven matters concerning which special care must be expended to ensure just proportion :

- (1) Equilibrium of temperament.
- (2) Selection of the articles of food and drink.
- (3) Evacuation of effete matters.
- (4) Safeguarding the composite.
- (5) Maintaining the purity of the air respired.
- (6) Guarding against extraneous contingencies.

(7) Moderation in regard to the movements of the body and the motions of the mind, with which may be included sleep and wakefulness.

689. From all these considerations you will now perceive that there is no single fixed limit to which equilibrium, or health is to be assigned. None of the temperaments enters into it. Health and equilibrium vary (in range) from time to time. That is to say, it is a state comprised within two limits.

We therefore begin by discussing first the regimen appropriate to the period of infancy, in which the temperament is continuously at one extreme of equilibrium.



THESIS I

ON NUTRITION

I. THE REGIMENT IN INFANCY—THE PERIOD FROM THE MOMENT OF BIRTH TO THE COMMENCEMENT OF WEANING.



PECIAL chapters discuss the regimen during pregnancy and the period when parturition approaches.

690 *Treatment of the Cord.* Many wise physicians state that when an infant of equable constitution is born, the umbilical cord should be severed four fingers' breadth from the umbilicus after it has been well but gently tied with a clean woollen ligature, so as to inflict no pain, and that an oiled cloth should be placed upon it. To help the separation of the cord, apply equal parts of the following : turmeric, dragon's blood, Persian gum, caraway, sweet scented moss, myrrh. These are ground together and applied.

691. *Treatment of the skin.* Then one should hasten to harden the surface of the skin by the use of slightly salted water until the cord has desiccated. The best agents to employ for this purpose are shādanaj (a stone, shaped like a lentil or bloodstone), bitter costus, sumach, fenugreek, and origanum. But the nose and mouth must not be exposed to such agents.

The reason for hardening the body in this way is that everything hot, cold, or rough is injurious to the sensitive infant's skin, and so it needs to be hardened against all things of that kind which will come in contact with it. Hence, if the process of salting has to be repeated, so do.

Such treatment is the more indicated if there are sordities or there is much humidity.

After this, the body should be laved in tepid water, the nostrils thoroughly cleansed with the fingers, whose nails are cut short, and a little oil should be instilled into the eyes. The anal

orifice should be caused to move by manipulation of its vicinity by means of the little finger, so that it may open. Care should be taken that nothing cold comes in contact with it.

After the cord has separated—which should be in three or four days—the stump should be treated with a measure of bone-ash or powdered lead oxide in wine.

692. *Binding the Infant.* In doing this the limbs must be handled very gently. Every part should be moulded according to its appropriate form—making wide that which should be wide, slender that which should be slender, doing all as gently as possible between the tips of the fingers. This should be done many times.

The eyes must be carefully wiped with a silken band.

The bladder-region should be pressed to help the exit of the urine. After this, stretch out the hands towards the knees. Bind the head, fitting as it were a cap to the head.

693. *Sleeping-quarters.* The infant must be placed in an airy room, with not too cool air. The room should also be shady, or even slightly gloomy so that the eyes are not likely to receive direct light. While sleeping the head should be at a higher level than the rest of the body, and someone should watch lest any part of the body (neck, limbs, back) should get into a twisted position.

694. *Bathing the Infant.* In summer time it should be bathed with suave tepid water. In winter the water should be on the warm side.

The best time to wash the infant is after a long sleep, but it may be desirable to wash it twice or three times in the day.

In winter, the infant should not be washed unless its body becomes ruddy and warm thereby. After taking it from the bath, take care none of the water gets into its ears.

695. *The way to hold the infant while washing it:* take it by the right hand, and hold it so that the left arm is over its chest and not over its belly. After the laving, the palms and soles should be gently raised (up and down). It should be gently wiped dry with soft cloths. Then turn it down on to its belly, then back on its back, rubbing gently all the while, pressing and moulding [and singing gently to it,—Ch.M.], then back on its belly to apply the binder. Afterwards instil sweet oil into its nostrils, and bathe the eyes and lids.

2. THE REGIMEN DURING LACTATION AND WEANING.

696. The following is the mode in which the feeding of the infant is to be arranged. Whenever possible, the mother's

milk should be given and by suckling. For that is the aliment of all others most like in substance to the nutrient material which the infant received while in the womb—the menstrual nutrients of the mother. It is these which are changed into milk after parturition, and such milk is better adapted for the infant.

Macrobius (*Saturn*, v. 11) gives the following reasons why the healthy mother should suckle her child. “Just as the strength and nature of the semen goes to fashion the likeness of the body and mind, so the natural dispositions and properties are conveyed by the milk. And it is not only in man that this is noticed. It occurs in cattle also. For it is easily shown that when young goats are brought up on sheep’s milk, their hairs become softer, and when lambs are brought up on goat’s milk the wool becomes harder.”

Experience shows that merely to place the mother’s nipple into the infant’s mouth is a great help towards removing whatever is hurtful to the infant.

697. It should suffice for the infant to suck the breast twice or thrice in the day at first, and it should not be allowed to take too much. It is best to wait till the [disturbance in the] temperament of the mother has subsided somewhat before the infant is given the breast. It may be give a little honey first, and the breast later.

The milk which the boy sucks should be drained away two or three times in the morning, before presenting the nipple, especially if there be any spots in the milk. Sourish or otherwise defective milk should not be given while the nurse is fasting.

698. Besides this there are also two other things to be done to help to strengthen the constitution : gentle (rocking) movements ; humming music or some old song, or prattling to the infant, as is customary while placing the babe into its cradle. How much these two practices are to be employed may be judged [individually] ; the movement is for the benefit of the body, and the music is for the benefit of the mind.

§ 240α.—Some idea of the cradle-songs actually used in the days of Avicenna may be formed from the instances recorded by Fox-Strangeways in his work on the Music of Hindostan (pp. 62-68). The words of Rama’s lullaby may be quoted : “ In Ayodhya, the land of kings, It was Vishnu’s self That was born on the lap of Kaushalya. Little babe, sleep upon my knee !—For the cradle is wrought of gold, And a Child therein, Of the whole world the Lord and Master, sleeps. Little babe, sleep, sleep upon my knee !—In the hand-hold of Kaushalya Is the cradle-cord, And the cord is the thread of Bodhana (= Knowledge). Little babe, sleep upon my knee.—And the Devis (= angelic beings) are strewing flowers From the highest heaven, And with each flower a blessing on the Child. Little babe, sleep upon my knee ! ”

Another illustration may be quoted to show the beautiful spirit in these lullabies. In singing such words over her babe, the mother must surely create an atmosphere around it which is for the benefit of its mind :

“ Baby mine, light of my eyes,
Here in thy cradle bright with flowers
Through sunny hours I bring thee sleep,
I rock thee and sing thee to sleep
On the wings of my melodies . . .
Srinangam island rises fair
Where the divided Käveris meet
I lay thee down there at His feet,
At Srîranga râja’s feet
Full sure of His tender care . . .
The golden nails no longer move
On which my baby’s cradle swung ;
The song is sung ; my ship is borne
Safe home, my ship is borne
Safe on the ocean of love . . . ”

699. *Inability to nurse the Child.* If there be anything to prevent the mother from giving milk to the babe—for instance, owing to her weakness or to the defective quality of her milk, or because it runs too quickly, a wet-nurse should be selected according to the following rules : (1) age ; (2) form or physique ; (3) personal character or habits ; (4) the shape of the nipples ; (5) the quality of the milk ; (6) the interval of time which has elapsed since her parturition ; (7) characters of her own child.

Having found a wet-nurse in whom the requisite conditions are fulfilled, she must be provided with nourishing foods such as are given in **708**.

700. *The characters of a good wet-nurse.* (1) The age should be between 25 and 35, because during this period there is youth and health and perfection. (2) Form and physique. The colour should be good, the neck strong, the chest strong and broad, the flesh muscular and firm,—neither very fat nor very spare, the proportion of the fat in the flesh being moderate. (3) Personal character and habits. These should be good and praiseworthy. She should be only slowly aroused by the bad passions of the mind, such as anger, gloom, fear, etc. For all these injure the constitution and may change the milk or pass into

it, or even prevent its secretion. It is for this reason that some people reject a nurse who is stupid. Besides this, if the character be not good, she will not trouble herself over the infant or caress it enough. (4) Shape of nipples. They must be firm in consistence and large, but not too large. [On the one hand large nipples hurt the infant's gums and impede deglutition, and on the other they will hold more milk than the infant can take, and some is then left behind to undergo decomposition, therefore being injurious at the next feed. If the nipples are too small, the infant cannot take hold of them, and there will not be sufficient milk : Aetius.] Therefore the consistence should be between hardness and softness. (5) Quality of milk. The consistence must be between coarse and fine ; the colour white (not dusky, greenish, yellowish or ruddy) ; the odour good, without acridity or pungency ; the taste sweetish (without any bitterness, saltiness, or acridity). The quantity should be of a certain amount. It must be homogeneous. It must not be thin, watery, nor very thick or cheesy ; nor must there be any discrete particles in it. There should not be much foam.

701. Tests. The consistence may be tested by allowing the milk to run over the finger-nail. If it flows easily, it is thin ; if it does not flow over the inclined nail, it is thick. Again, place some in a glass vessel, and drop a little myrrh into it, and stir the two together. The aquosity and the degree of caseity are then evident. The milk is laudable and attempered if the watery part and cheesy part are equal.

Should there be some special need to prepare such a milk, we should prepare it partly from the mother, and partly from the wet-nurse. From the mother because it is better not to give thick milk of unhealthy odour until it has been allowed to stand exposed to the air for a while ; and because it is best not to give very warm milk to the fasting infant.

702. Diet. If her milk is thick, the wet-nurse should take oxymel ; and a decoction of attenuants such as wild marjoram, hyssop, thyme, savory, origanum montanum, and the like should also be included in the menu. A little radish may be added [old pickle in vinegar and honey : Aeg.]. Vomiting should be induced with hot oxymel to get rid of the phlegm. (Suitable) work before meals will help to thin the milk. [Frequent baths : Aetius.]

If the wet-nurse be of hot intemperament she should take acetous syrup, and a light wine should be taken either at the same time or separately.

703. If her milk is thin, one should instruct the nurse to rest, and avoid exercise or work, and she should be given foods which thicken the blood. If there is no contra-indication, one might allow her sweet wine. [The following are also recommended : strong soups or broths (Aeg.), a gruel prepared with fennel ; green dill boiled in a ptisan with fine bread, pork-flesh, flesh of kids, or of tender birds: Aetius.] Allow plenty of sleep.

704. If the milk is scanty, one should ascertain the cause : e.g. is it an abnormal temperament affecting the whole body, or the breast itself ? To determine which it is one employs the indications given in preceding chapters. If palpation of the breasts shows them to be unduly hot, the diet should consist of such things as barley water, spinach, and the like. If there are signs of coldness of temperament in the breasts, and of obstructions, or inadequate attractive power, the diet should include attenuated aliments tending to a warm nature ; and cupping instruments should be applied beneath the breasts, taking care not to press much on the breast. Carrot seed is also beneficial, and the carrot itself is also very good for such a condition.

Should the cause be that the nurse has been previously insufficiently fed, she should be given a broth made with barley, bran and legumes, and such as the following should be introduced : fennel roots, and seeds, and dill, and nigella. Others say that the udders of sheep and goats should be eaten with the milk therein contained, as being helpful in virtue of that which is of like nature or property in such foods. Others have recommended the administration of an "ounce" of tree-worms or dried earth-worms in barley water for several days, saying they have found it excellent for the purpose. So also the expressed juice of the heads of salted fish, taken in dill water.

705. *List of Galactogogues.* (1) One ounce of butter from cow's milk placed into a vessel of good wine ; taken as a drink. (2) sesame ground up in a fine mill and mixed with wine ; taken as a drink. (3) An emplastrum or liniment applied to the breasts, prepared with the faex of balsam of nard and asses' milk and oil. (4) Take one ounce of the interior parts of brinjal (egg-plant), this being dissolved in wine, by stirring ; it is taken as a drink. (5) The following is a powerful medicament : dill seed, three ounces ; seed of blue melilot* (or, lot tree),† of leek, one ounce

* Melilot : a sort of clover.. The blue melilot or 'curd herb' gives the odour and flavour to Schabzieger cheese, the dried flowers being used.

† The lot tree : *pyrus aria*, or white beam-tree (apple tribe) (Lindley and Moore).¹³²

of each ; clover seed and fennel seed, two ounces of each ; mix the whole into a drink with fennel juice, honey and butter. [(6) (Aegineta) : broom leaves taken in dark-coloured wine or in a ptisan ; sweet gith (*melanthium*), and the root and seed of carrots soaked in warm water. Aegineta warns that such remedies are weakening to the body.] (7) Massaging the breasts frequently with bland hands renders the secretion of milk plentiful.

706. *Anti-galactogogues.* If the milk is injuriously abundant, or has accumulated because it is unable to escape owing to the presence of some form of obstruction, or because the milk is too thick, one may reduce the quantity secreted (1) by reducing the amount of food ; (2) by employing those articles of diet which contain but little nourishment ; (3) by applying a (dis-cutient) plaster over the chest and breasts, composed of caraway in vinegar or white clay in vinegar, or of lentils boiled in vinegar ; this is followed up by a draught of salted water ; (4) by eating mint.

If the milk has an unpleasant odour, the remedy is to give as a drink a fragrant wine ; and as food, foods of pleasant odour.

707. (6) Rules regarding the period of time which has elapsed since the wet-nurse was herself confined.—The birth should have been recent, namely $1\frac{1}{2}$ months at least (two months, if the child was a male) ; the birth should have occurred at the proper date and not premature ; nor should there be a history of habitual premature births.

708. Regimen of wet-nurse.

Diet : the aliments should consist of food giving good chyme. For example, foods such as wheat, frumenty, lamb, kid of goats, which are not putrescent or have hard flesh. Lettuce, almonds, filbert-nuts. Mint. Potherbs which are deleterious : herb-rocket, mustard, mountain balm—for they cause the blood to undergo decomposition. [Aegineta also advises against desiccative, salt, acrid, acid, sour, bitter and heating articles of food ; foods having an offensive smell ; very fragrant things ; condiments ; alcohol.]

Exercise. This should be moderate. [Aetius says : work with the hands and shoulders, milling, weaving, carrying the child about in the arms.

Personal : cleanliness of person (Aetius).] The wet-nurse should not allow coition, for this disturbs the menstrual blood and diminishes the quantity of milk and alters its composition, as shown by change of odour. Moreover she might become

pregnant, in which case there would be a dual unpropitious influence—to the wet-nurse herself in that whatever is attenuated in the blood enters into the nutriment of the embryo, and to the embryo in that it loses as much from the mother's aliment as passes on to form milk.

709. During the whole period of lactation, especially the first lactation, it is advisable to have some of the milk drawn off to encourage and facilitate its flow; this is also aided by massage, otherwise the delicate organs of suction will be injured and weakened. It is a help to anoint with a little honey each time before the infant is nursed; and a little wine may also be added. It should not be allowed to take much milk at one time. It is better to feed little and often, at small intervals. For it may happen that after becoming satiated with the whole of the contents of the breast the infant suffers from distension, and very much flatulence, and the urine becomes white [too watery, Aeg.] In such a case, the best thing is to stop the nursing, allowing the infant to go hungry for some time, and it should be meanwhile put to sleep till digestion has had time to be completed. [It is unduly sleepy if over-fed.]

At first, the infant is allowed the breast three times only in the day. Should it be necessary to feed it on the first day, it would be better for someone else than the infant's mother to do so, as we have explained.

Should the wet-nurse develop an intemperament or a painful malady, or have diarrhoea, or be constipated, someone else should give milk until she is better. The same applies if it be necessary to administer to her some medicine which has a decided potency or quality.

The infant is laid to sleep after feeding, but its cradle must not be rocked vigorously as otherwise one would churn the milk in its stomach. The rocking must be quite gentle.

It is good for the infant to cry a little before the feed.

710. Duration of lactation. Normally this is two years. When something additional to milk is required, such addition should be made step by step. Weaning must not be abrupt.

"He committed the child to the nurse, and he drank milk two years, after which they weaned him, and he grew up, and throve, and walked upon the floor." (Night 250).

After the first two teeth have appeared, a progressively stronger aliment is to be considered. Hard things, however, must not be allowed. At first, bread is given which the nurse

has masticated. Afterwards, bread softened with honey water, or dilute wine or with milk. This is followed by a little water, or even a little wine in the water. It must not be allowed to take food to repletion. Should indigestion or flatulence occur, and should the urine become white, all food is stopped for a while, at least until it has been anointed in the bath.

711. Weaning. In weaning the infant from milk, the aliment must consist of articles which can be sucked up ; and the replacement of milk by "acorns" of bread and sugar should be gradual. Soft meats may be given. If the infant persistently seek for the breast, crying for it, the best thing is to prepare a paste to apply to the breast, made of four ounces of myrrh and smoothly ground pennyroyal.

712. Regimen up to Dentition. To sum up, we may say that the regimen of the infant is to be humectant, corresponding to its temperament at this period, for this is necessary both for nutrition and growth. The infant is also to be exercised gently correspondingly to the needs of nature, and especially during the later period of infancy.

[The word "exercise" includes lulling with music and singing lullabies : exercises are to be followed by gentle rubbing ; and after that comes the bath, which must not be cold. (Aegineta.)]

When the child begins to creep about, it must not be allowed to make strenuous efforts, or be encouraged to walk or sit erect before the natural desire to do so appears ; otherwise there may be injury done to its legs and back. When it first sits up or creeps over the ground, it is best to place it upon a smooth skin, to prevent injury by roughness in the floor. Bits of stick or any objects able to pierce or cut the skin must be kept out of its way. Care must be taken that it does not fall off some elevated place.

713. Hygiene of Dentition. When the canine teeth are about to appear, the infant must not be allowed to chew at anything hard lest the material from which these teeth need to be made should become dissolved by the processes of mastication. The gums should be rubbed with hare's brain and cock's fat, as this will help their eruption. After the appearance of the teeth, the infant's head and neck should be rubbed with oil which has been shaken up with hot water [to cleanse it], and a little of the same oil may be instilled into the ears.

As soon as the infant is able to bite with its teeth, it will show this by trying to bite its own finger. It should then be given a stick of not too dry liquorice root or inspissated Spanish

juice to chew at, for this will be beneficial at this period and will prevent ulcers from forming in the gums and dull the pain [and irritation of teething]. The gums may also be rubbed with salt and honey to relieve the pain.

When the teeth are fully out, the infant may be given a stick of liquorice or root of liquorice (not too dry) to bite at. When the canines are fully out it is good also to rub the neck with some form of sweet oil. Later still, when the infant begins to talk, its teeth should be rubbed, especially at their bases.

3. CONCERNING THE DISEASES OF INFANCY

714. The chief mode of treating infants is by controlling the wet-nurse. If there should be any suspicion of plethora of blood in her, bleeding or cupping should be done. If there be plethora of some other humour, that must be drained also. When it is necessary to bind, or to loosen the bowels, or to prevent the ascent of vapours to the head, or to rectify the respiratory organs, or to correct an intemperament, the method of treating this is by way of the food and drink [of the nurse]. If it becomes necessary [for the nurse] to procure plentiful evacuation by the bowel, or if this occurs spontaneously ; if emesis needs to be procured, or if vomiting occurs spontaneously, it is best to give the infant to someone else to nurse during that period.

715. DISORDERS DURING DENTITION

Inflammation of the gums (*gingivitis*) may occur during dentition. Inflammations may also occur in the ligamentous structures round the mandibles, causing trismus. In such cases one should gently press the parts with the finger and rub in one of the oils named in the section dealing with the eruption of the teeth, or honey which has been well mixed with oil of chamomile, or with turpentine oil. One may also pour warm water, in which chamomile and dill have been boiled, over the top of the head from a height. (Cf. 414.)

For *burning pain in the gums* apply oil and wax as an epitheme or use salted flesh which is a little "high."

[Aegineta advises rubbing the gums frequently with the finger alone or anointed with fowl-grease, while the infant is in the bath. When the teeth are just about to show anoint the head with sweet oil and drop some into the ears. He recommends the amount of food to be increased, and advocates warm baths. For itching of the gums, he says the flesh of an old pickle will relieve.]

Diarrhoea. This is specially apt to arise during dentition. Some account for it as due to the sucking in by the infant of

salty sanious effete matters from its own gums along with the milk. But it is possible that this is not true ; that the real cause is an interference with the natural faculty, so that digestion is imperfect and pain results. It is just this that hinders digestion in feebly constituted infants.

Cf. Modern teaching : "Vomiting and diarrhoea must always be looked upon as due to some cause other than dentition, particularly to improper feeding.—Elder and Fowler.¹⁵⁰

If it is only slight, you will not be asked to treat it. If the parents are afraid it will become injurious, leading to wasting, one would treat by applying rose-seed, caraway, anise, and celery (parsley-) seed [sprinkled on wool : Aeg.] to the abdomen, or apply a plaster prepared with caraway and roses infused in vinegar, or with frumenty boiled in vinegar. Should this fail, use a sixth part of a dram of goat-cheese in cold water, taking care to prevent curdling of the milk in the infant's stomach by replacing the milk for that day with the soft yolk of an egg, or with morsels of bread boiled in water, or ground wheat boiled in water. [Hot desiccants may be used : Aeg.]

Constipation during dentition. The treatment is by a suppository made with well-cooked honey, or with pennyroyal, or with iris-root (in the natural state or after scalding). A little honey may be given in the food. As much oil of turpentine as makes the bulk of a chick-pea may be gently rubbed over the abdomen ; or olive-oil ; or some ox-bile may be applied over the thigh or over the navel. Or maidenweed (bakhūri maryam) may be applied. [Or the abdomen may be anointed with mint pounded in honey : Aeg.]

716. Convulsions during dentition. This is generally due to fermentative changes in the digestion, aided by nervousness, especially if the baby is over-fat and humid in constitution. The treatment is to use oil of iris, lily, alkanna, or mallow. [Aetius advises against figs and acid foods.]

Grave convulsions during dentition ; "tetanus." This is treated by water in which cucumber [or heliotrope] has been boiled ; or by oil of violets admixed with oil of cucumber [or oil of privet : i.e. calefacients : Aeg.].

If there is reason to suppose that the convulsions are due to dryness, because they develop after fevers, or after severe diarrhoea, and because they gradually become more pronounced, then the joints should receive an inunction with violet-oil (alone or beaten up with a little white wax), and violet-oil may be applied to the head. The same things should be employed vigorously if "dry" tetanus develop.

To the lay mind, all forms of gastro-intestinal catarrh, skin eruptions and nervous phenomena (particularly convulsions) are attributed to dentition. Beyond admitting that there is usually some congestion of the gums, with exaggerated salivation, some loss of appetite, restlessness, temporary rise of temperature, and general uneasiness, Elder and Fowler (*loc. cit.*) teach that these various phenomena depend chiefly on rickets, and nutritional errors. There is however something to be said for the lay view.

After the teeth have appeared, Aegineta recommends the infant to be allowed to bite at a piece of nearly dry decorticated iris root. Butter and honey should also be inuncted.

717. *Incessant crying, with loss of sleep.* The mouth is constantly whimpering. [The causes of persistent crying are : heat ; cold ; fleas ; gnats ; hunger ; thirst ; retained urine—for which give melon-seed and julep to both nurse and child ; retained faeces—for which give the nurse laxatives, herbs, olive oil, prunes : Haly Abbas.] For this condition it is necessary to make it sleep if possible, by giving poppy bark and seed, and oil and lettuce and apply poppy oil to the temples and vertex. If this does not suffice prepare the following medicament : Take bugle seed, juniper berry, white poppy, yellow poppy, linseed, celandine seed, purslane, plantain seed, lettuce seed, fennel seed, aniseed, caraway ; some of each is roasted little by little ; then all are rubbed together. Add one part of fried fleawort seed which is not powdered. Mix the whole with a like amount of sugar and give two "drams" as a potion.

If it is desired to make it still stronger, one should add an amount of opium equal to a third part of it or less.

718. *Night-terrors.* These are often due to over-repletion with food, which undergoes putrefactive change. The stomach is aware of this. An injurious effect passes on from the sensitive faculty to the formative and imaginative faculties, wherefore the terrifying visions arise. It is necessary therefore to see that the stomach is not full at bed-time ; honey should be given the infant to lick, and in this way it will digest that which is in the stomach and displace it.

719. *Water on the Brain.* This is discussed under the heading of diseases of the head.

Inflammation in the brain. Siriasis. There is pain in the eyes and the throat, and the face becomes yellow. [The body is dry ; the fontanelles are depressed, the orbits sunken : Aeg.] Hence the brain must be rendered cool and moist by the use of cortex of cucumber, parings of gourd, juice of garden nightshade, and especially purslane juice, and rose oil with a little vinegar, and rose oil with egg-yolk. Each of these is constantly changed.

720. *AFFECTIONS OF THE MOUTH. Aphthous stomatitis.* *Aphthae.* *Thrush.*—Aphthae are plentiful when the lining

membrane of the tongue and mouth is too delicate to bear touching, even by the wateriness of the milk, for it is this that is injurious to it, and gives rise to the aphthae. The condition is worse, and dangerous to life, if they remain immature and black like charcoal. The condition is more favourable if they are white or yellow. The treatment is to employ some such gentle medication as is described in special treatises on the subject. Sometimes triturated violets are sufficient by themselves ; sometimes they need mixing with roses, a little saffron, and carob-bean. Or, again, lettuce-juice, nightshade juice, purslane juice [and endive-juice] may suffice. If treatment is still resisted, use bruised liquorice root.

Galen advised cooling astringent washes if the mucous membrane is red ; more refrigerant washes if it is yellow ; detergents if it is white, and, according to Alsaharavius, a powder of myrtle, saffron, and sugar. The strongest discutients (sandarach, rose-oil) are needed, if the mucous membrane is black.

When aphthae are associated with boils in the gums, it is beneficial to use myrrh, gall, frankincense bark, thoroughly ground up and mixed with honey. An acetous rob* of mulberries, and a rob of unripe grapes may suffice. Sometimes it is advantageous to bathe the gums with honey-water and wine (or, syrup and honey) and follow this up with some of the desiccatives we have named.

If a stronger (astringent) medicament is required, use the leaf-veins and bark of pomegranate, and pomegranate blossoms, and sumach, six drams of each ; galls, four drams ; aniseed, two drams. Rub them together and thoroughly powder them up. Then dust this upon the gums.

721. THE EYE. *Prominence of the eyes.* Apply juice of boxthorn made with milk ; then bathe with water in which chamomile and mountain balm have been boiled.

Whiteness over the pupils, due to much crying, is treated with nightshade juice.

If the eyelids are affected with *blepharitis*, owing to constant crying, treat this also with nightshade juice.

722. THE EAR. *Watery discharge from the ears.* This is due to an undue degree of moisture in the body, especially in the brain. An ointment is prepared with wool-fat, honey, wine, and a little alum, or nitre or saffron. This is then introduced into the ears with a syringe. Or it may suffice to dip wool into a sour wine, or into wine to which a little saffron has been added, and place this in the ears.

* Lit. juice made thick.

Earache. This may be due to flatulence, or to undue moistness. It is to be treated by juice of boxthorn, origanum, salt, white sugar, lentils, myrrh, colocynth seeds, and cedar [or, savin] seeds. Any of these should be digested in oil and instilled drop by drop.

723. DISTURBANCE OF THE BREATHING. *Difficulty of breathing.* Anoint the roots of the ears and tongue with oil. It would also be very helpful to press the tongue down so as to cause the infant to vomit. Warm water may also be dropped into the mouth drop by drop, and a little linseed and honey be given it to suck.

Abnormal snoring. This is noticed when the infant is in very deep sleep. Give linseed ground up in honey, or ground caraway in honey, to lick.

Snorting, says Aegineta, is due to improper food. The stomach becomes loaded with phlegm. A linseed linctus is to be given, or honey. If that does not suffice to stop it, vomiting is induced as above.

(*Laryngismus stridulus* may correspond to this and the preceding, since the laryngismus is apt to occur during sleep, and is aggravated by crying, whereas stridor may disappear under both these conditions. The question of adenoids would also come to mind).

Constant sneezing. This may be a sign of cerebral disorder. In such a case this must be treated, cooling the inflammation, by inunction with infrigidant juices and oils. If there be no inflammation, some mountain balm may be insufflated into the nostrils.

Loss of voice in infants is due to constipation. Give cabbage-juice by the mouth or rectum (Aeg.).

724. COUGH AND CORYZA. Some people advise for this that the infant's head should be laved in plenty of warm water, and that plenty of honey should be smeared over the tongue. After that, the root of the tongue should be depressed to enable the infant to expel the abundant phlegm by vomiting, which will secure recovery. Small doses of the following demulcents may also be given daily in new milk : gum arabic, gum tragacanth, quince seed, liquorice juice, brown sugar.

725. DIGESTIVE DISTURBANCE. *Weakness of the stomach.* The abdomen should be anointed with musk and rose or myrtle water. Give a drink containing quince juice and a little clove or nutmeg, or three-eighths of a dram of nutmeg with a small quantity of quince-juice.

Severe vomiting. This may be treated with three grains of clove. A plaster containing weak anti-emetics may be applied over the stomach.

Hiccough. For this administer coco-nut with sugar.

726. *Flatulent distension.* The treatment has already been given in the section on diseases of the head. The following very useful measure may be here mentioned. Take equal parts of origanum, castoreum and caraway. Rub them up and mix together. Give the weight of three barley grains in a draught.

Colic. The infant writhes and cries. Hot water applications should be made to the abdomen, using also plenty of warm oil and a little wax.

Griping. This is due to cold. Beneficial for this condition is the following : three drams of each of nasturtium and caraway; grind them together. Pass through a sieve. Intersperse them with old cow butter. Give as a draught with cold water.

727. *Prolapsus ani.* Give pomegranate bark, fresh myrrh, inner rinds of acorns (or, chestnuts), dried roses, burnt horn, alum of Yamen, nails of goats, pomegranate blossoms (unopened) and nails of fowls. Take equal parts and thoroughly boil them together in water until all their virtue has come out. Then give as an enema, tepid.

[Aegineta advises applications of tepid brine or salt water. In modern words : give astringent enemata.]

728. *Hernia.* When a child cries very much, a swelling may form in the groin or navel. This is a hernia. Some advise that it should be rubbed with cardamon (bishop's weed) and sprinkled with egg-white, a thin bandage being applied tightly over the place. Others advise burnt bitter lupin, as an infusion in wine and myrrh, placed over the part. Stronger remedies are : hot styptics (astringents), such as myrrh ; cypress bark ; cypress fruit ; aloes ; acacia fruit. [Compresses of alum, galls, etc. : Aetius.] See also the special chapter on the subject.

729. *Formation of an inflammatory mass between the throat and stomach* [= retro-pharyngeal abscess ?]. This sometimes spreads to the muscles and cervical vertebrae. The treatment is to cause the infant's bowels to act, using a suppository. After that, give mulberry rob and the like.

An inflammatory mass may form *in the navel*, especially after the cord has separated. In this case one should use celtic spice and turpentine ; dissolve them in rape-seed oil. They may be given internally or applied as a plaster over the navel.

730. *Worms.* Round worms are very injurious when they arise in the small intestine. Thread-worms are usually round the anus. Flat worms are rare. Round worms are treated with absinthe water (wormwood of Pontus), of which a little is given in milk, according to its concentration. It may be necessary

to apply a plaster over the abdomen, made up of Kabul rice, myrobalan, ox-bile, and colocynth pulp. To treat threadworms take one part of each of elecampane and madder [chelidonium ; a kind of cucumber : (other readings)] ; add sugar equal in bulk to the whole. Give as a draught with hot water.

731. DISORDERS OF THE SKIN.—[Aegineta gives the following advice :—(1) Attend to the diet of the wet-nurse. Give sweet articles of food. (2) Attend to the diet of the child ; (a) this should not be too rich or too spare; (b) avoid constipation: add a little honey to the food; or, should this prove inadequate, add turpentine to the bulk of a chick-pea; (c) avoid looseness of the bowels: add millet to the food.]

Furunculosis. Pimples forming all over the body. If they are ulcerating and black it is a fatal sign. If they resemble aphthae, it is also mortal, especially when they spread out. If they are white, it is more hopeful. If red, it is also more hopeful. If they come out freely, it is a better sign.

The treatment in all cases consists in using fine desiccants dissolved in the bath-water, such remedies as rose, myrtle, mastic-leaves, tamarisk, and their respective oils being boiled in the water. [Other remedies recommended by Alsaharavius : lotions of marjoram, mint, centaury ; ointments of spuma argenti, ceruse, armenian bole, sulphur, mercury, almonds.]

If the furuncles are healing, they should be left alone until they are mature ; and they are then treated.

If they are ulcerated, they need an ointment of ceruse. They may need bathing with honey-water and a little nitre, as one does aphthae.

If they scab over it will be necessary to use something stronger. One therefore bathes them with aqueous borax mixed with milk, to enable it to be borne.

If they become vesicular, they should be steamed, and have water poured over them in which myrtle and rose and bogrush (*schoenus*), quinsywort (*asperula*) and the (young) leaves of the mastic tree have been boiled.

For *vesicular eruptions*, Rhazes advises : (1) decoction of dates and figs with fennel-water ; (2) when the rash is fully out, give rose-water baths, myrtle-water baths, and then rub the skin with oil of roses.

Intertrigo. Apply ground myrtle as a dusting powder, or use powdered liquorice root [or iris root] ; or finely ground-up rose or galangale, or barley flour, or lentil flour.

Pruritus.—Foment and anoint with refined oil, in which a little wax has been melted (Aeg.). Correct the acrimony of the mother's milk (Alsaharavius). Stop all sweets and salts in the mother's diet, because they inflame the blood. Immerse the child in a bath of mallows, pearl barley, fenugreek, gourds, etc. (Rhazes).

732. *Fevers.* In this case it is best to treat the nurse by giving her such remedies as pomegranate juice mixed with oxymel and honey and succus citruli, and a little camphor and sugar [or, acetous syrup of pomegranate and honey and cucumber juice, with a little camphor and sugar]. Then induce sweating by using fresh reeds, which are squeezed so that their juices can be applied to the head and feet, covering these parts therewith.

4. THE REGIMEN FROM INFANCY TO ADOLESCENCE

733. The great principle here is the inculcation of control of the emotions. One should take care that they do not give way to anger and fear, or be oppressed by despondency, or suffer from sleeplessness. They should therefore be allowed that which is pleasing and appetizing and one should avoid giving them anything arousing disgust.

There are two useful objects attained in this way. The first is that the mind grows from its very start accustomed to favourable emotions, and develops a fixed habit for good. The second is that the body is also benefited. For just as bad habits of thought supervene on intemperament of the body, so also a physical intemperament may be traced to habits of mind which are contrary to the ideal.

Anger is a strong calefacient. Despondency is a desiccant. Torpor relaxes (retards) the sensitive faculties, and causes the constitution to tend towards the phlegmatic type. Therefore in safeguarding the emotions the health of the mind and body are at the same time maintained.

734. When the child awakes, it should first have a bath. He should then be allowed to play for an hour. Then he should have his breakfast. Then he should be left to play for a long time. Then he should have another bath. Then he should have a hearty [light : Aeg.] meal, but he must not be allowed to drink water with his meal, because otherwise insufficiently digested chyle will become absorbed and disperse all over the body.

735. At the age of six, he may be given tuition by a master [who is of mild and benevolent disposition : Aeg.], who will teach him step by step and in order [cheerfully, without constraint]: He should not be compelled to stay continuously in school. [Relaxation of the mind contributes to the growth of the body : Aeg.] At this age, bathing and rest should be less frequent, and the exercise before meals should be increased.

Wine must not be allowed. This is specially true if the temperament is hot and moist, because the injurious effect of

wine—namely the generation of bilious humour, as is seen in topers—readily influences the child. The advantage in wine is that it excites the secretion of urine, thus removing the bilious humour with it, and that it moistens the joints. Neither of these effects are necessary at this age, because his bilious humour is not so plentiful as to need helping out of the body, nor do the joints need moistening. He should therefore be allowed as much sweet limpid water to drink as he wishes.

This is the programme up to thirteen years of age. Care is daily exercised towards lessening the humidities, and increasing the dryness of the tissues, and hardening the body. [Grammar is taught now : Aeg.]

The rule therefore is to allow light exercise, and to avoid whatever entails toil, between boyhood and adolescence. After this age, the regimen is that usual for maintaining the health (in early manhood).

From 14-21, use gymnastic exercise to strengthen the body and prevent indulgence in carnal desires. Wine should be allowed sparingly. Pursue mathematics and begin philosophy (Aegineta).

We may therefore pass on to the subject of exercise, first discussing the essentials for the regimen of young adults, and the subject of gymnastic exercise.



THESIS II

THE REGIMENT PROPER FOR THE PHYSICALLY MATURED.

§ 241.—THE RIGHT USE OF ADULT LIFE.

How happy is he who takes advantage of early days, and pays his debt (to God)—
Those days when he has power, health, energy of heart, and strength ;
That state of youth, like a verdant and fresh garden, yielding produce and fruit
unstintingly ;
The springs of strength and eager desire flowing, and the soil of the body verdant
through them.

Masnavi,⁵⁷ p. 107.

The real object of conserving the energies of the body lies in the attainment of spiritual development. The actual bodily occupation is itself, if we will it so, the practical means of that attainment. The energy of will to associate this means of worship with the subjugation of the vices inherent in our frailty must be employed during the early years if we are not to find ourselves in old age powerless to advance along the critical stages of the journey to the only true Goal. This principle underlies the idea of "right Regimen."

The soil of the "body" and the "desires" having been consistently tilled and purified and tended, the coming of old age cannot but also reveal spiritual blossoms full of delight for others. "Do not then wait," says the *Masnavi*,

"till

The soil becomes barren, dry and poor ;
Never do fine plants grow from barren soil ;
When the water of energy, and the water of eager desire cease
He derives no benefit from himself or from others ;
The eyebrows hanging over like a crupper-strap ;
The eyes watery and dim ;
The face through old age like the back of a lizard ;
The articulation and taste defective, and the teeth useless ;
The day late, the ass lame, and the road long ;
The workshop (i.e., the physical body) gone to ruin,
And the work disorganized,
The roots of a bad nature fixed firmly in him,
And the power to tear them up diminished."

(*Ibid.*, 107-8.)

A picture admirable of the state of affairs in old age ; and also full of significance in regard to the well-being of the soul.

I. THE GENERAL REGIMEN FOR THE ATHLETIC AGE. COLLECTIVE
DISCOURSE UPON BODILY EXERCISE



736.

INCE the regimen for maintaining health consists essentially in the regulation of (1) exercise, (2) food, and (3) sleep, we may begin our discourse with the subject of (gymnastic) exercise. We may define exercise as voluntary movement entailing deep and hurried respiration.

Once we direct the attention towards regulating exercise as to amount and time, we shall find there is no need for such medicaments as are ordinarily required for remedying diseases dependent on [abnormal] matters, or diseases of temperament consequent upon such. This is true provided the rest of the regimen is appropriate and proper.

737. We know that this must be so when we reflect how, in regard to nutriment, our health depends on the nutriment being appropriate for us and regulated in quantity and quality. For not one of the aliments which are capable of nourishing the body is converted into actual nutriment in its entirety. In every case digestion leaves something untouched, and nature takes care to have that evacuated. Nevertheless, the evacuation which nature accomplishes is not a complete one. Hence at the end of each digestion there is some superfluity left over. Should this be a frequent occurrence, repetition would lead to further aggregation until something measurable has accumulated. As a result, harmful effete substances would form and injure various parts of the body. When they undergo decomposition, putrefactive diseases arise.* Should they be strong in quality, they will give rise to an intemperament ; and if they should increase in quantity they would set up the symptoms of plethora which have already been described. Flowing to some member, they will result in an inflammatory mass, and their "vapours" will destroy the temperament of the substantial basis of the breath.

That is the reason why we must be careful to evacuate these substances.

Their evacuation is usually not completely accomplished without the aid of toxic medicines, for these break up the nature of the effete substances. This can be achieved only by toxic

* Bacterial infections.

agents, although the drinking of them is to a certain extent deleterious to our nature. As Hippocrates says, "medicine purges and ages." More than this, the discharge of superfluous humour entails the loss of a large part of the natural humidities and of the breath, which is the substance of life. And all this is at the expense of the strength of the principal and auxiliary members, and therefore they are weakened thereby. These and other things account for the difficulties incident to plethora, whether they remain behind in the body or are evacuated from it.

Now exercise is that agent which most surely prevents the accumulation of these matters, and prevents plethora. The other forms of regimen assist it. It is this exercise which renews and revives the innate heat, and imparts the necessary lightness (airiness !) to the body. For it causes the subtile heat to be increased and daily disperses whatever effete substances have accumulated ; the movements of the body help to expel them, conveying them to those parts of the body whence they can readily leave it. Hence the effete matters are not allowed to collect day after day, and besides this, as we have just said, exercise causes the innate heat to accresce, and keeps the joints and ligaments firm, so as to be always ready for service, and also free from injury. It renders the members able to receive the nutriment, in being free from accumulated effete matters. Hence it renders the attractive faculty active, and resolves fibrosis in the tissues, rendering the members light, and the humidities attenuated, and it dilates the pores of the skin.

To forsake exercise would often incur the risk of "hectic," because the faculties of the members are impaired, inasmuch as the deprivation of movement prevents the access to them of the innate breath. And this last is the real instrument of life for every one of the members.

§ 242.—**VALUE OF EXERCISE.**—(1) It hardens the organs and renders them fit for their functions ; (2) It results in a better absorption of food, aids assimilation, and, by increasing the innate heat, improves nutrition. (3) It clears the pores of the skin. (4) It removes effete substances through the lungs. (5) Strengthens the physique.

Vigorous exercise invigorates the muscular and nervous system.

2. THE VARIOUS FORMS OF EXERCISE.



738. There are two main forms of exercise : (a) that pertaining to the ordinary human undertakings ; (b) that which is undertaken for its own sake, namely for the advantage accruing from its pursuit. [i.e., sports, athletics, gymnastics, etc.]

There are differences between the two forms. One is strong and powerful, the other weak and light ; one is speedy, the other slow. Athletics implies strenuous exertion, combining swiftness with energy. Recreative exercise, undertaken for relaxation, implies leisurely movements. There are all grades between these extremes, and there is a mean between them [called moderate exercise].

739. *List of the forms of exercise.* (i) Strenuous forms. Wrestling contests. Boxing. Quick marching. Running. Jumping over an object higher than one foot. Throwing the javelin. Fencing. Equitation, or horsemanship. [Hunting : Galen, Rhazes.]

Equitation " strengthens the body, especially the stomach, more than any other mode of exercise. It clears the organs of special sense, and renders them more acute. But it is most imimical to the chest " (Antyllus).

The mental excitement of hunting is good for many diseases.

Clapping the two hands alternately before and behind, with a quick motion while standing on tip-toes. [Dancing (Oribasius), Swimming (ib)]. These are special forms of individual athletic exercises.

Dancing, said Hippocrates, is beneficial for amenorrhoea, and has been used for procuring abortion.

Swimming in the sea.—This has a warming effect, and strengthens the body, and renders it thin. It is beneficial for dropsy, skin eruptions, elephantiasis. But it may be injurious for the head and nerves. The body must be rubbed with oil first. (Oribasius.)

(ii) The following are recreative or milder modes of exercise. Swaying or swinging to and fro, as when being carried in a litter. Standing or reclining in small boats. Fishing. Sailing. " Gestation "—that is, being driven in horse-carriages, or carried on camels, or in palanquins, or a horse-litter.

[*Military exercises*]. Among the more vigorous exercises are those performed by soldiers in camp, in military sports. Pleth-running—where a man runs on the campus from end to end (a sixth of a stadium), to and fro, lessening the distance each time until finally he comes to stand in the middle. Combat with one's shadow. Exercise with the leatherbag [which is filled with

flour or sand, and hung to the level of the person's navel ; then pushing it forwards as far as it will go, the athlete runs rapidly backwards to escape its recoil : [Oribasius]. Long jumping. High jumping. Play with a large ball [inflated skins or leather]. Play with a small wooden ball on horseback [i.e., polo].

" He took the bat from the Sage and grasped it firmly ; then, mounting steed, he drove the ball before him and galloped after it till he reached it, when he struck it with all his might, his palm gripping the bat-handle the while ; and he ceased not malling the ball till his hand waxed moist and his skin, perspiring, imbibed the medicine from the wood." (Night 4, Burton i. 42).

Stone-throwing. Lifting heavy stones or weights, either while standing, or carrying them. Cricket (tibtab). [Scaling ropes. (Aeg.). Digging (Aeg.)]. Running galloping horses round in a circle. [Leaping with a weight on the shoulders, which exercises the spine : Galen.]

740. There are various forms of *wrestling*. For instance, in one form, one of the wrestlers grasps the other and holds him by the tips of the hands. The other tries to get loose from his opponent. In another, one wrestler grips the right hand of his opponent, and takes the left hand with his left, the two facing one another; then the one raises the other up into the air, and turns him round, sometimes in the bent position, sometimes in the upright position. (See drawing at head of this section.) Again, the two wrestlers may press against one another breast to breast. Again, one holds the other by the neck to pull him to the ground. Or, one may twist and press with his feet, twisting his legs round his opponent, or turn heel to heel. Various other movements of that kind are in vogue among wrestlers.

Exercises involving swiftness. Interchanging places with a partner as swiftly as possible, each jumping to and fro, either in time [to music] or irregularly. Another exercise is carried out with two stakes. The man jumps backwards repeatedly without moving his position, and plunges the two stakes on either side, one pace apart, causing the one on the right to go to the left, and the one on the left to go to the right. This is to be done as swiftly as possible.

Exercises involving vigour and swiftness should alternate with mild exercises, or with rest. The manner of the exercises should also be diversified, so that they are not always performed in the same way.

741. *There is an exercise which is appropriate for each individual.* Gentle exercise (e.g., swinging : rocking in a swing) is beneficial for those who are debilitated by fevers, and

are convalescent, and can neither walk nor sit. Also for those weakened by a draught of hellebore and the like. Also for those whose diaphragm has been rendered enfeebled by disease. When it is done gently, it tends to induce sleep, and disperse flatulence, relieves various disorders of the head (e.g., stupor, forgetfulness) —provokes the appetite, and favours movement of the bowels.

To ride in a litter [horse, camel, palanquin, etc.] is appropriate for those afflicted with semitertian fever, composite fevers, phlegmatic fevers, those who are dropsical, or have gouty pain, or renal disorder. For this form of exercise renders (effete) matter in a condition favourable for excretion, and may be made gentle for the feeble, more vigorous for the more vigorous. Greater movement is produced in the humours by riding in a carriage, but when doing so one should face backwards, because this is better when the eyesight is weak, and it is an advantage to have the shadow in one's face.

Fishing.—The absence of mental and bodily excitement is good for certain conditions (Aetius).

Boating and Sailing.—To go out in a small boat, or in a larger sailing vessel is beneficial for lepra, dropsy, apoplexy, dilatation of the stomach and coldness of the stomach. For if the person is near the shore he is incited to vomit, and then when that subsides, the stomach is benefited. But to go on the high seas is more efficient for clearing up such disorders as we have named, because the mind is diverted by successive gladness and misery, and the organs of nutrition receive benefit in proportion to the exercise of the body itself.

742. Each member should be exercised in a manner appropriate for itself. (i) *The hands and feet.* The proper way to exercise these is obvious. (ii) *The organs of respiration,* and the muscles of the chest. These may be exercised in various ways. (a) By singing and “vociferation.” The voice is sometimes deep, sometimes loud, sometimes abrupt, sometimes used in all modes in one exercise. By this means the condition of the mouth, uvula, lips, tongue is improved. The muscles of the neck are improved in appearance. The colour of the skin is improved. The chest is expanded. (b) Exercises in which the expiration is forced and the breath is held. [i.e., the so-called Yogi exercises.] These benefit the whole body, because they open up and purify the channels, including those of the breath.

As shown in § 123, 144, the channels here referred to are not necessarily the anatomical and histological ones.

Aetius adds that such exercises attenuate the blood.

However, to use a loud voice for a long time is injurious because by continuing it vigorously too much air is taken in, which is itself harmful, and by continuing it too long, air must be expelled unduly, and this also is harmful. Therefore the rule is to begin gently, by reading aloud, speaking more and more loudly up to a certain point and then allowing the voice to sink by degrees. If the time occupied in this exercise is moderate, it is very helpful, but if the time is too long, there is risk of injury to health.

[Reading aloud in a high tone helps to remove redundant humours through the skin. Reading in a moderate tone helps the insensible perspiration throughout the body, attenuates effete matters, and gets rid of saliva, mucus and phlegm by coughing. Frigid people should read aloud frequently because of its warming effect. This method of exercise requires control and judicious management if the system is full of depraved humours, or if the stomach is loaded with crudities, because otherwise noxious gaseous substances are distributed all over the body.]

Ritual : First empty the bowels ; then anoint the body ; then sponge the face and lower parts with water. The tone of the voice should be moderate at first, and the person should walk about while speaking. Then a louder tone should be used, and verses should be repeated several times (Aeg.).]

(iii) *Vision* is exercised by inspecting minute objects, and sometimes by arranging that they are only poorly illuminated.

(iv) *Audition* is exercised by listening to faint sounds, or sometimes to loud ones.

(v) Exercises appropriate to each individual member will be referred to when we speak of the maintenance of the health of each organ in the special volume.

Among the modern books which describe suitable exercises of the above kinds, that by Eustace Miles may be here noted (see Bibliography).¹³³

743. Whatever the exercise, one must ensure that its vigour or heating effect is not likely to affect some weak member directly. Such a member should only bear the brunt of the exercise secondarily. For instance, a person with varicose veins should not use an exercise in which the feet are much used. He should substitute an exercise which employs the upper parts of the body—the neck, the head, and the hands. In this way the brunt of the effect of the exercise is borne first by the upper parts, and by the feet last.

The exercise must be modified if the person is debilitated. If he is robust it should be made vigorous.

You realize now that every member has its own peculiar form of exercise. That the exercise for the eye is to gaze upon something delicate ; that the exercise to strengthen and expand the chest is vocal, and consists of graduated singing exercises. Similarly with the teeth and the ear. Every member is considered in this way in the chapter specially devoted to it.*

* This and other references in the original text are retained, though actually the subsequent volumes of the Canon are not dealt with in the present treatise.

3. THE BEST TIME FOR COMMENCING EXERCISES. THE PROPER DURATION, AND OTHER RULES.

744. The time to choose for beginning exercise is when the body is free from impurities in the internal organs and blood-vessels, so that there is no risk of unhealthy chyme being dispersed through the body by the exercise. Yesterday's food should have passed both gastric and hepatic digestion, and also intravascular digestion,—the time for the next meal now approaching, as can be ascertained by examining the urine as to its substance and colour.

§ 243. The urinary signs of the proper time for undertaking exercise are specified in Aegineta.—The urine should be deep yellow, because this shows that the digestion has long since been completed. If the urine is moderately pale, it shows that the digestion has only just been completed. An evacuation of the bowels is here indicated. If the urine be watery, it shows that there is still some undigested chyme in the stomach.

If it is some time before the next meal is due, and there is a need for more nutriment, and the urine shows "igneity" (i.e., is high-coloured), the natural yellowness having now passed off, it indicates that exercise at this time would be detrimental, namely by exhausting the strength.

For this reason, some people say that when vigorous exercise has to be undertaken, it is best that the stomach should not be quite empty : that there should still be a little food, and that this should be substantial in winter, and light in summer.

Moreover, it is better to choose a time for exercise when one is not hungry, and when one is hot and moist rather than cold and dry. But the best time is when the state is between the two. Exercise in a man of hot and dry temperament may lead to illness, and he will benefit by avoiding it at such a time.

745. It is necessary, then, for a person who is about to take exercise that he should first get rid of the effete matters of the body by way of the intestines and bladder. Should friction be used in preparation for exercise, with the object of helping the bowels and opening the pores of the skin, it should be carried out with a rough towel, and be followed by inunction with sweet (perfumed) oil made warm by being held in the hollow of the palm. This inunction is done according to rule until the limbs show a florid blush ; the massaging should not be too forcible, nor the penetration too great. It is done with the hands, which pass over many various positions in order to ensure that every part of the muscular system has been dealt with. When completed, the massage is stopped and exercise may begin.

746. *Relation to seasons.* In spring, the best time for exercise is round midday, and it should be done in a moderately warm room. In summer, the exercise should be done earlier. In winter, it should be delayed till vespers, but there are other objections to doing so. Consequently, in winter, the place used should be made moderately warm, to enable the exercise to be carried out at a time when the aliment is digested and the effete matters have been expelled.

747. *Amount of exercise.* Three things must be taken into consideration, (1) The colour. As long as the skin goes on becoming florid, the exercise may be continued. After it ceases to do so, the exercise must be discontinued. (2) Movement. Exercise may be continued as long as the movement is moderated. (3) The condition of the members. Exercise must not be continued after they show any puffiness. Should the insensible perspiration lessen and the visible sweating stop, the exercise must stop. Should the action of the skin have ceased, one applies a strongly-diaphoretic oil as an inunction, especially if the exercise were one which exerted the breathing. (Restorative friction and massage will be needed : Aeg.)

748. At the conclusion of the first day's exercise, you will know the degree of exercise allowable ; and when you know the amount of nourishment the person can bear, do not make any change in either on the second day. Arrange that the measure of aliment, and the amount of exercise shall not exceed the limit ascertained on the first day.

4. FRICTION. MASSAGE. SHAMPOOING

"Abu Sir came to him and rubbed his body with the bag-gloves, peeling from his skin dirt-rolls like lamp-wick, and showing them to the King, who rejoiced therein . . . after which thorough washing, Abu Sir mingled rose-water with the water of the tank, and the King went down therein. When he came forth, his body was refreshed, and he felt a lightness and liveliness such as he had never known in his life." (Night 935). (Burton, v. 488).



Friction (massage) before (left) and after (right) the bath. From a woodcut of date 1533 (Martin², p. 171).

749. Varieties. (a) Hard Friction: this stretches and contracts, and braces the body. (b) Soft Friction has a relaxing effect. (c) Repeated friction diminishes the fat of the body. (d) Moderately hard friction increases the bulk of the body.

Combination of these will give nine varieties [“ much and hard, much and soft, much and moderate ; little and hard, little and soft, little and moderate ; moderate and hard, moderate and soft, moderate and moderately hard ” (Aegineta).]

(e) Rough friction. This is done with rough towels. It draws the blood rapidly to the surface. (f) Gentle friction. This is done with the palm or with soft towels. It draws the blood together and retains it in one member.

The *object of friction* is to render thin persons heavier, and heavy persons thinner ; to brace flabby persons, and to modify those who are not pliable enough (giving tone to the body).

(g) Friction as a preparatory to athletics. The friction begins gently, and then becomes more vigorous as the time approaches for the exercise.

(h) Friction as a sequel to athletics—Restorative friction. This produces repose. Its object is to disperse the effete matter formed in the muscles and not expelled by the exercise. It causes them to disperse and so removes fatigue [the feeling of lassitude]. Such friction is soft and gentle, and is best done with oil [or perfumed ointments : Aeg.]. It must not be hard, or heavy, or rough, because that would roughen the members. Young men would be hindered in growth. But for adults it is less harmful.

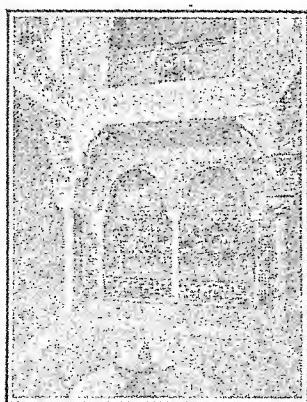
750. It is less detrimental to err on the side of hardness than on that of softness, because it is easier to correct undue dispersal [of effete matters] than to prepare the tissues (by soft friction) for the reception of effete substances. On the other hand, hard and rough friction to an excess in youths is a hindrance to their growth.

You will learn about this under the heading of “ the proper time for friction.” For the present it will suffice to say that restorative friction should be begun vigorously at first, and with oil ; that then it should be moderated, but not stopped, until all roughness has gone. It is best that many persons should do it together. The person, having been rubbed, now stretches out his massaged limbs to help to expel the effete matters from them, and a broad bandage or binder is applied over the regions to which the muscles concerned belong. He should hold his breath as long as he can, while relaxing his abdominal muscles ; he should at the same time make his thoracic muscles tense, if he can. Finally, he makes his abdominal muscles tense again. In this way the intestines are given a certain amount of restorative friction. One may pause to take breath between the exercises ; or sometimes restorative massage may be given in the middle of the exercise. Thus, it may be omitted or resorted to, according

to whether the exercise is to be prolonged or not. A person who desires restorative friction does not need much preliminary friction, unless there is something about his condition with which he is not satisfied. If he does not desire restorative friction he will undergo more thorough preliminary friction. If fatigue should be experienced, inunction with oil will be employed, as we have stated. If he should experience a sense of dryness, the friction will be increased until the natural mean condition is attained.

Friction without massage (compression) is beneficial if sleep is due, because it cheers the body and prevents humid matters from flowing into the joints.

5. ON VARIOUS USES OF THE HOT BATH



751. For the type of person whose regimen we are discussing, a bath which induces resolution is not required, because his body is inwardly pure. A person does not need the bath except in order to derive a gentle warmth from it, and a moderate amount of moisture. That is why such persons should not stay long in it.

If such persons employ a full-length (copper) bath, they should stay in it only until the colour of the skin becomes red, and the skin becomes puffy ; they should leave it as soon as dispersal (of humours) begins. The surrounding air should be moistened by a sweet-water spray. The actual washing should now be quick and the bath left quickly.

A person should not go into the bath immediately after exercise. He should rest properly first.

752. The forms of bath have already been referred to, and are dealt with again in another place. At this point we should state that all who propose to bathe should pass through the successive rooms of the bath-house according to rule, and not linger in the hot room long enough to cause harm; they should stay long enough in the rest-room* to give time for the dispersal of the effete substances, otherwise there is a risk of weakness which will interfere with alimentation and leave a susceptibility to the causes of septic fevers.

* The inset depicts the interior of the rest-room of the Sultan's private baths at the Alhambra Palace.

753. A person who wishes to become stout should take his bath after a meal, if he is not likely to develop obstructions in consequence. If he is of hot temperament, he may guard against the formation of obstructions by drinking oxymel. If he is of cold temperament, he should take pennyroyal and capsicum.

If it is desired to reduce fat, and to procure the resolution of the humours, the person should bathe while fasting, and stay a long time in the bath.

754. *Precautions regarding food and drink.* To ensure against impairment of health the bather should wait till after the gastric and hepatic digestions are both completed.

Where there is any risk of the bilious humour undergoing fermentative decomposition, and one wishes to bathe fasting, the aliment should be attenuant. But a person of hot temperament, in whom the bilious humour is plentiful, should not enter the hot chamber at all. The best things for such persons to take are : bread soaked with the juice of fruits or rose-water. Cold drinks should not be taken either while in the bath or when leaving it, for the pores are now open, and coldness would speedily enter and pass towards the principal organs and damage their functional capacity. Articles which are very heating ("hot") should also be avoided, especially water—because thereby there is a risk of the warmth penetrating rapidly to the principal organs and this predisposes to wasting and hectic. Further, such persons should take care not to leave the bath suddenly, or to uncover the head, thus exposing the body to cold. If it is winter, the body should be well covered with towels.

755. A person suffering from fever should avoid the bath at the febrile period. The same applies to a person suffering from any form of loss of continuity, or from inflammation.

756. From the above, therefore, it will be clear to you that baths have the following effects : warming, cooling, humectant, desiccant, beneficial, harmful.

Beneficial effects : the induction of sleep ; aperient action ; abstergent action ; resolvent action ; digestive ; drawing nutrient to the surface of the skin. But the resolvent effect only occurs if that is desired ; the excretory effect occurs only through the natural channels. Baths are beneficial for constipation and for removing lassitude.

Injurious effects. The heart is weakened if the person stay too long in the bath. The bath produces syncope and nausea, and sets stagnant humours in circulation, and disposes them to

undergo putrescence, and to pass down into the weaker members, with consequent inflammatory deposits in both internal and external members.

6. ON ABLUTION WITH COLD WATER

§ 244. It may be noted that ablution with cold water constitutes part of the ritual of Mohammedan prayer, and imparts a sense of cleanliness besides helping to preserve the physical health.

The medicinal use of affusion, cold sponging, and cold packs will be thought of under the present heading.

Whereas hot water is debilitating, cold water is strengthening. The addiction to the hot baths of the Hammans in Turkey has been held by some Mussulman writers to have been detrimental to the virility of the race.

757. This form of ablution is only beneficial if all the proper rules are observed, and if the age of the person, his physique and build, are suitable, and the season* is appropriate (i.e. the summer). The contra-indications are : nausea, or a feeling of satiety associated with indigestion ; vomiting ; or diarrhoea ; or want of sleep ; or nasal catarrh. The person must not be at the age of boyhood, nor at old age. [Therefore he must be in the prime of life.] The moment chosen for the ablution should be one at which the body is light and the movements appropriate.

Ablution with cold water following upon one with hot water.—The object of this is to make the external parts stronger, and to retain the natural heat. For this purpose the water used should not be very cold, but of a medium temperature.

758. Ablution with cold water after exercise.—Here the preparatory friction should be more vigorous than usual. The customary inunction with oil is employed as well before the exercise, which must be less vigorous than usual. The exercise completed, the person plunges into the cold water tank, so as to harden all the members at once. He stays in the cold water in proportion to his lightness, and as long as he can without shivering ensuing. Then, having come out of the water, let him be rubbed as we have described (i.e. till the skin is red), and let him take more food than drink. The time which elapses before the natural colour returns to the skin must be noted, because if the colour returns rapidly, the duration of the cold bath was reasonable, whereas if there is delay, it shows that the stay in the water was too prolonged. In this way the person will know the proper duration of the bath for the future.

* It has been a widespread belief that the atmosphere in springtime affects open waters, so that it was healing and strengthening to bathe out of doors at this time. (Martin, ⁵², p. 11).

Should the person wish to re-enter the water after the friction, and after regaining his colour and normal heat, he must on this occasion enter the water gradually, and on a hot summer's day before the hottest part of the day, and when no wind is blowing. He must not do so when in a state of lassitude after coitus, or after a meal which has not had time to digest, or after emesis, or after evacuation of the bowels, or after gastro-enteritis, or insomnia, or if the body or stomach be enfeebled.

Cold bathing should not be done after exercise except in the case of the very robust. Even then the rules which we have given should be followed. To use cold baths in the ways we have named drives the natural heat suddenly into the interior parts, and then invigorates the strength, so that the person should leave the bath twice as strong as when he entered.

§ 245.—*Sea-bathing*.—Modern advice follows the same rules as above. Namely, do not enter the sea too soon after a meal, or if not feeling quite fit. There is otherwise a risk of cramp. The sea should not be entered in the early morning unless one is very healthy.—To enter the sea too often in the day (more than twice) has a decidedly weakening effect. The best time to bathe in the sea is the warm afternoon, two hours after a meal. The proper thing to do after the bathing is to rest—not to run about on the sands. (Remember sharks.)

7. THE REGIMEN IN REGARD TO FOOD AND DRINK

(Comestibles and Potables.)

“The stomach is the house of disease and diet is the head of healing; for the origin of all sickness is indigestion, that is to say, corruption of the meat in the stomach” (Night 45²).

§ 246.—*Meal-times*.—Burton (vi. 111) mentions “breakfast” (Arab. *futūr*) which is eaten immediately after the dawn-prayer, except in Ramazan. This is a substantial meal of bread and boiled beans, eggs, cheese, curded milk and the pastry called *fatirah*, followed by coffee and a pipe.—Lane¹⁵⁹ (i. 169) mentions “dinner” as being taken after the noon-prayer, and states that a single meal may be taken before noon instead of these two meals. The principal meal is supper, which is taken after the sunset prayers.

759. In seeking to maintain health care must be taken that the essential basis of the meal is not in medicinal nutrients like potherbs, fruits, and such-like. For things which are tenuous in character over-oxidize the blood, and those which are dense render the blood phlegmatic, and the body heavy.

The meal should include : (1) flesh, especially kid of goats,

veal, and year-old lamb ; (2) wheat, which is cleaned of extraneous matter, and gathered during a healthy harvest without ever having been exposed to injurious influences ; (3) sweets of appropriate temperament ; (4) fragrant wine of good quality. Any other kinds of food can only be regarded as a sort of medicament or preservative.

(Cf. the modern (1) animal protein food ; (2) vegetable proteins ; (3) carbohydrate. Fats and salts complete the list, in place of wine as given above.)

The more nutritious fruits are : figs, grapes (ripe and sweet), dates from countries and regions in which they are indigenous. But if superfluity arises after partaking of these fruits, speedy evacuation should be procured.

760. In winter the food should be hot ; in summer cold or only slightly warm. A food should not be served either hot or cold if it is likely to be spoiled thereby.

761. A person should not eat unless hungry. Nor should he delay his meal until the appetite has passed off. This rule does not apply in the case of the fictitious appetite met with in drunkards, or the subjects of nausea. If fasting be continued, the stomach will fill up with putrescent humours.

Nothing is worse than to eat to repletion during a time of plenty after having been in a state of starvation during a time of famine, and vice versa. But the transition period is the worse. For we often see many people who lack food at a time of famine, and eat to repletion when a fertile year comes, with fatal result. Great repletion is very dangerous in any case, whether in regard to food or to drink. For how often do not people over-eat, and perish from the consequent choking of the channels of the body ?

762. An error in eating or drinking any of the medicinal nutrients is to be corrected according to the digestion and maturation thereof, and the person must be protected from the intemperament which is likely to arise. To effect this, one takes the contrary substance until the digestion is completed. Thus, if the aliment was cold (e.g. cucumber, gourd), temper it with its opposite (e.g. onions, leek). If the aliment was hot, temper it with the opposite (e.g. cucumber, purslane). If the aliment is binding, take some food which will open and evacuate, and then fast for a suitable period. A person in this state—and this is true for all who wish to maintain their health—should not partake of food until there is a definite appetite, and unless the stomach and upper small intestine have emptied themselves of the previous meal. For there is nothing more harmful to

the body than to superpose aliment upon incompletely digested food. There is also nothing worse than nauseative indigestion, especially when this is the result of bad foods. For if these are gross, the following symptoms and illnesses arise : pains in the joints, in the kidneys ; dyspnoea, podagra, indurative enlargement of the spleen and liver, illnesses in which the serous or atrabilious humours are concerned. If the foods were attenuated, then acute fevers, malignant fevers, and grave acute inflammatory disturbances would develop.

However, it is sometimes really necessary to give a food or a substance like food, on the top of another food, by way of medicine. For example, if one has taken sharp and salty nutrients, one may further take humectant aliments which have no flavour, before the former have digested completely. The chyme by which the body is nourished is then rectified. This is a suitable measure for cases of this kind, and the use of exercise is not indicated.

The contrary holds good in the case of those who partake of gross foodstuffs and afterwards admix with them something which is speedily digested and acrid in taste.

763. A small amount of movement or *activity after a meal* allows the food to descend to the fundus of the stomach, especially if after this there is a desire to sleep. Mental excitement or emotion ; vigorous exercise ; these hinder digestion.

764. In winter, feebly nutrient foods, like pot-herbs, are not to be partaken of. The aliments should be stronger and more solid in texture—such as cereals, legumes, and the like. In summer, the contrary is true.

765. The *quantity of food* taken at a meal.—No meal should be bulky enough to completely satisfy the appetite. One should rise from the table while some appetite or desire for food is still present. For such remnants of hunger will disappear in the course of an hour. Custom is to be regarded in this regard, for a meal is injurious when it brings heaviness to the stomach, and wine is injurious when it exceeds moderation, and swims in the stomach.

If one ate to excess one day, one should fast the next, and a longer sleep should be taken in some place which is neither hot nor cold. If sleep refuse to come, one should take gentle walking exercise and allow neither rest nor recumbent position. A little pure wine should be taken. Rufus says, “ Walking after a meal is grateful to me, for it gives a good preparation for the evening meal.”

A short sleep after a meal is useful ; one should lie first on the right side, then on the left, and finally turn back again to the right side. If the body be covered with a number of wraps and the neck be raised, this will aid digestion. The limbs should slope downwards and not upwards.

The standard size of the meal depends on usage and vigour. A normally robust person should take as much as will not produce a sense of heaviness, or a sense of tightness of the hypochondria. There should be no subsequent rumbling in the stomach, or splashing of the food on bodily movement. Nausea should not be experienced, nor a canine appetite, nor loss of appetite, nor great disinclination for exertion, nor sleeplessness. The taste of the food should not repeat in the eructations. If the taste of food lingers in the mouth a very long time after the meal, it shows that the latter was too heavy.

766. Indications that the meal was moderate : the pulse does not become full ; the breathing does not become shallow. The latter only occurs if the stomach is compressing the diaphragm, thus making the inspirations shallow and short. The pressure to be met by the heart increases after a large meal, and as the force of the heart does not diminish, the pulse becomes large and full.

A person who experiences a sense of heat and flushing after a meal should not take a whole meal at one sitting, but partake of the food in small portions at short intervals to avoid the effects of repletion—such as shivering followed by a sense of heat like that in a sthenic fever. This is due to the heating effect of the food.

A person who cannot digest the amount of food appropriate for him should increase the number of articles of diet, but diminish the quantity.

A person of atrabilious constitution needs a diet which is very humectant but not very heating.

A person of choleric constitution needs a diet which is humectant and infrigidant.

A person who generates hot inflammable blood needs feebly nutritious articles of food, which are cold. One who generates phlegmatic blood needs feebly nutritious articles of diet which are hot and attenuant.

767. The order in which the components of a meal are to be taken.—A person who is desirous of maintaining his health needs to be watchful of this matter. Thus, one should not take a tenuous food, which is rapidly digested, after taking a very

nutritious dish which is slowly digested. An exception to this rule has been named above. The reason is that the first article of food will be digested first and therefore float over the other, unable to enter the blood. Consequently it ferments and decomposes, and in addition sets up decomposition of the food next taken. The reverse order, therefore, is the one to adopt, so that the labile food will pass on with the other into the intestine, and then undergo complete digestion.

Fish and similar articles of food should not be taken after laborious work (or exercise), because they undergo decomposition and then decompose the humours.

Some persons may be allowed to eat an article of food in which there is a styptic property as a preparatory to the actual meal.

768. *Idiosyncrasies.* Some persons have an idiosyncrasy of the stomach in which the foods leave it very rapidly, and do not stay in it long enough to undergo gastric digestion. This explains the necessity for taking the idiosyncrasy of the stomach and its temperament, into consideration [along with other factors when drawing up a dietary].

There are some persons in whom tenuous food, instead of being digested quickly as it should, undergoes decomposition in the stomach, whereas less rapidly digestible foods are digested more readily. The stomach of such a person is designated igneous. But other persons are exactly the opposite. Therefore the rules to be given must be adapted to the peculiarity of each (patient).

769. The countries in which people live have also their own natural properties, which are distinct from the ordinary rule. This must also be borne in mind, and a test must be made to ascertain what the rule should be. Thus, a food which is often used, though injurious to a certain degree, may be more appropriate for a given individual than a food which he does not often take, though its character is good.

"The best food of every people is that which grows where they live: oats—that is, porridge—for Highlanders; wheat for the centre of Europe; rice for the swamps of the Far East; etc. But in these days of easy and quick transport, any foods can be obtained in any part of the world, and peoples are enabled to partake of foods unnatural for them."¹²³ (p. 1077).

770. Then again, there is a food which is to be regarded as appropriate to everyone's physique and temperament. To change from such a diet would prove injurious and detrimental to him.

Good and laudable foods may be injurious to some. They

should therefore avoid them. But persons who are able to digest "bad" foods should not be deceived, because (for all they know) they will some day give rise to bad humours and the consequent obstinate ailments.

Good food may often be allowed liberally in the case of persons in whom the humours are unhealthy, so long as diarrhoea from intestinal weakness does not supervene in consequence. But if the person be of spare habit, and liable to have the motions loose, the diet should consist of moist aliments, because they are digested quickly, even though it is a fact that such persons can tolerate various heavy foods, and are less liable to be affected adversely by intrinsic noxae, and are more susceptible to the antagonistic influence of extraneous noxae.

771. An active person accustomed to take much flesh-meat needs frequent bleeding. A person inclined to be frigid in temperament should drink substances which cleanse the stomach, intestines and the (mesenteric) veins—including confections of spices and myrobalan electuary.

772. It is a bad practice to combine nutrients of diverse character in one meal and so prolong it. For by the time the last portion has entered the stomach, the first portion is already digested, and therefore the various contents of the stomach are not all at the same stage of digestion.

773. *Palatability.* One should remember too that aliment is best which has the most agreeable flavour, for the walls of the stomach and the retentive faculty jointly apply themselves better to a food of good substance, and the efficiency of the retentive power is assisted when the principal members all mutually concur—the temperament of one being not more divergent from that of another than natural. That is the requisite condition. The conditions are not fulfilled, for instance, if the temperaments are not normal, or alike in the respective members. Thus, the temperament of the liver may differ to an unnatural extent from that of the stomach.

Among noxious influences arising from the taste of aliments is that if very gross aliments are tasty, a person may be tempted to eat too freely of them.

774. In taking successive satiating meals, it is best for a person to take only one on one day and two on the next (morning and evening). But one must not be too strict in this rule, for if a person is accustomed to have two meals a day, and then takes only one, he will be weakened and his (digestive) faculty will suffer. A person of weak digestion should take two meals a day,

lessening the amount partaken. On occasion he may eat once a day. A person who is accustomed to take one good meal a day will, on resuming the habit of two meals a day, suffer from weakness, lack of energy, slackness. If he should take no food at bedtime, he will feel weak ; and if he should take a late meal he will not be able to digest it, and will have acid eructations, nausea, bitter taste in the mouth, loose bowels and become moody, or irritable. This is because he has put into the stomach something to which it is not accustomed, and so he is liable to show some of the symptoms which befall a person whose aliment is not fully digested.—And these you are now acquainted with.

775. Among the symptoms arising when a person does not take a late meal are : subjective sensations at the cardiac orifice of the stomach, gnawing pains, a sensation of a void in the stomach so that all the interior organs and intestines feel as if they were suspended, and therefore all clumped together. He passes scalding urine, and the faeces produce a burning sensation as they are passed. There may be a feeling of cold in the extremities owing to the bilious humour being poured out into the stomach and irritating it and making it congested. This is more likely in persons of bilious temperament, and in those who have bilious humour in the stomach but not to an undue extent in the rest of the body ; these suffer from loss of sleep, and keep turning over from one side to the other [in bed].

776. Persons then in whom the bilious humour is apt to accumulate in the stomach should take their meals divided, thereby taking the food quickly ; the meal is taken before bathing. In other persons exercise should be taken first, then the bath, and then the meal. The meal should not precede the bath in these cases. If circumstances demand that the meal be taken before the exercise, the food should consist of bread only, and to an amount no greater than can be easily digested. As it is necessary that the exercise should not be gentle if taken *before* food, so it is necessary that the exercise should be mild and gentle if it is taken *after* the meal.

When the appetite is depraved so that it prefers sharp-tasting things to sweet or unctuous things, nothing is better than to procure emesis with such as oxymel with radish after fish.

777. A person who is stout should not eat at once after a bath, but should wait and take a little nap. He is best advised to take only one meal in the day.

778. One should not go to sleep immediately after a meal, with the food still swimming in the stomach, and one should, as

much as possible, abstain from much exercise after a meal, lest the food pass into the blood before it is sufficiently digested, or glide out of the stomach without being digested at all, or undergoes decomposition, since the exercise disturbs the gastric temperament.

779. Nor should much water be drunk after a meal, for it causes the food to leave the coats of the stomach and float about. One should wait, and not drink fluids until the food has left the stomach—which is evidenced by the sensation of lightness in the upper part of the abdomen. However, if there were urgent thirst one may take a modicum of cold water through a straw, and the colder it is the less one will require. Such an amount would soothe the stomach and keep the food together.

"Neither drink (water) immediately after leaving the Hammam nor after eating (except it be after the lapse of fifteen minutes for a young man and forty for an old man), nor after waking from sleep" (Night 452).

"If a man wait awhile after eating, and then drink, the drink is sweeter and lighter and more digestible to him than at another time, and there ascends to him a pleasant fragrance and a penetrating," as quoth the poet: "Drink not upon thy food in haste, but wait awhile, else thou with halter shalt thy frame to sickness lead : And patient bear a little thirst from food, then drink." (Night 451; Burton.)

780. To sum up—if a person must drink, it is better only to take so small an amount, at the end of the meal (not during the meal), as will spread over and moisten the food, and therefore not be injurious.

To go to sleep while thirsty, is beneficial to cold and moist temperaments, but is injurious to those in whom the temperament is too warm, because of the bilious humour (being too plentiful). The same is true as regards going to sleep while fasting.

Bilious humour comes to predominate in persons who fast, and therefore flows into the stomach. Therefore when they eat any food it decomposes, and the same symptoms occur in them, whether asleep or awake, as when food corrupts. And, furthermore, there is loss of desire for food.

781. When there is *loss of appetite for food* something needs to be given to counteract this and relax the bowels. For this purpose something mild, like prune, should be given, or something which does not suggest nausea, like a laxative fruit-juice (manna). Meals may be resumed after the appetite has returned. Those whose tissues are moist in virtue of natural humidity are liable to speedy aperient action, and are in consequence not able to fast as long as those whose tissues are dry in virtue of only a small (degree of natural) humidity :—unless the latter should be rich in humidities other than those inherent to the substance of the tissues, for these are proper, good and receptive, and in

consequence the natural faculty is able to change them completely into (true) nutriment.

782. To take wine after a meal is very unsatisfactory, for it is rapidly digested and enters the blood quickly and carries food on into the blood before it is properly digested. Obstructions and decompositions [in this imperfectly digested aliment ultimately] arise.

Sweet things readily produce obstructions [in the channels of the body], because the attractive faculty draws them into the blood before they have been properly digested. Obstructions culminate in various diseases, of which dropsy is one.

Heaviness of the air or water, especially that of summertime, favours the decomposition of food. In this case, then, it is not harmful to take a tempered wine after a meal, or hot water in which xylaloës and mastic have been boiled.

783. If a person whose alimentary tract is "hot" and strong, should eat *heavy food*, it will give rise to flatulence in the stomach and fermentative ailments.

When a person takes a *tenuous* article of *food* upon an empty stomach, the latter contracts on it, and if he then takes something heavy, the stomach abandons the tenuous food and ceases digesting it, and it undergoes putrescence in consequence. This would be avoided by allowing an interval of time to elapse between the two kinds of food. Under these circumstances it is best to take the heavy food slowly, because then the hold which the stomach has on the tenuous food is not broken.

§ 247. The principle is that the food should be *held* close to the mucous membrane all the time. This is what is done by the "attractive faculty." The stomach "holds" the food close to its mucosa as a mother holds the babe to her breast; the pylorus keeps tightly closed until it is time for the gastric contents to pass on, on the same principle as applies in the case of the os uteri, which does not open until it is time for the uterus to evacuate itself; or in the case of the bile-papilla, which remains tight until the time comes for bile to be passed into the duodenum. The gall-bladder also keeps (tonically and) accurately applied to its contents in a similar way. In each case the retentive faculty operates until the expulsive faculty is called upon, and vice versa. Modern physiology regards it all as mechanical, comparing everything to the test-tube experiments; but it is actually *vital*—one might almost say purposive—it is as much purposive as the grasp with which the coelenterate holds its prey.

Once a gap is allowed to intervene between the food "attracted" or grasped by the mucosa, then digestion stops and the food particles clump up and swim about in bits in the fluid, and then putrefy. One might picture the normal process as one of apposition to the

mucosa as the limpet shell is affixed to the rock ; that fluid may be allowed to separate off the film of food from the mucosa by mismanagement, and that when it does so at one spot, the whole film will peel off, and folds up or breaks up. Once this has done it is hopeless to restore it again to its previous position, and "indigestion" is definitely the fate of that meal.

784. When a state of over-repletion exists in regard to some meal, whether as a result of exercise (which causes undue hunger), or because a draught has been taken as well, then there will be a need for rapid emesis. If this should fail, or one cannot vomit, the person should sip hot water until the repletion is displaced and sleep supervenes. The person should therefore lie down and (compose himself to) sleep. Let him sleep as long as he will.—But should this not suffice, or should he be unable to go to sleep, reflect whether the natural course of events is likely to save you from procuring emesis. If so, good. If not, assist the natural power by any gentle laxative, such as myrobalan electuary, confection of roses, or origanum prepared with sugar or honey ; or by the use of such things as cumin, spiced candies, asphodel and cabbage ptisan.

It is not as bad to be repleted with wine as with solid food.

785. Among the (aperient) remedies which are suitable after food are : aloes to the bulk of three chick-peas ; or half a drachm of aloes, half a drachm of mastic, and a sixth of a dram of nitre. Mild remedies are : turpentine resin to the amount of two or three chick-peas ; nitre in equal quantity, or less, if necessary. Another much praised remedy is to use an epitheme with wine (821, 839).

If none of these remedies succeed, let the patient sleep for a long time, and abstain from food for a whole day. Then, if he feels better, let him bathe, and place a hot blanket over the abdomen, and see that the aliments are tenuous.

If the food is still not properly digested, in spite of all these measures, and heaviness, distension, and lack of energy are experienced, you may know that the veins are already overcharged with effete matters. Bulky and unneeded nutriment, even were it digested in the stomach, would hardly undergo the proper changes in the veins, and so would remain "crude" within them, and stretch them, even to bursting point. This is the explanation of the lack of energy, the heaviness, the desire to stretch oneself and the yawnings. The treatment in such a case consists in securing the release of the superfluities from the blood vessels.

If these are not the symptoms, but there is only a transient weariness, followed later by another form of weariness, this should be treated in the manner to be described.

786. If a person should be very advanced in years, and his body does not derive as much benefit from the food as it did when he was young, and if his aliments become simply effete matters, then he should not eat as much as he used to do.

787. If a person is accustomed to a heavy diet and then lightens it by the use of attenuant foods, the new food material is unable to keep the channels (of the body) as full as before. So, on resuming the heavy foods, obstructions are brought about.

788. *Heating foods.* The injurious effects of heating or calefacient foods can be corrected by the use of syrup containing acetic acid, especially when made with seeds, for then the syrup is more efficient. If honey is used however, the simple syrup will suffice. The injurious effect of "cold" foods is corrected by the use of hydromel, and its syrup, and caraway.

789. *Heavy and Light Foods.* To correct aliments which are heavy, a person having a hot temperament should use acetous syrup made of strong seeds ; a person with a cold temperament should use a little capsicum or peppermint.

Tenuous foods are better for the health, but less valuable for the vegetative faculties and strength. Heavy foods have the opposite value. Hence, for a person in need of a tonic, aliments which make strong chyme are necessary, and such as antagonize the hunger-feeling. But they should not be taken in greater quantity than can be digested. Heavy foods are better borne by those who take plenty of exercise or are accustomed to heavy work. Probably the deep sleep which this favours helps the digestion. But on the other hand they lose much by sweating. And as their livers seize whatever of the aliment has not yet digested fully, this paves the way for fatal illnesses towards the end of life, or at the beginning of life, the more so because they trust in their digestive powers too much. This power is really due to the deep sleep which is customary, and that is lost by old age.

790. *Fruit.* Fresh fruit is only good for those who carry out hard work, or take much exercise, or for persons with plenty of bilious humour, or during the height of summer. Fruit should be taken before a meal,—namely, for instance, chrysomela, mulberries, melons, peaches, and prunes. But it is better to regulate oneself by using other articles of food than these, for they render the blood too watery, and so it is apt to ferment.

Hence the juices of fruits, unless taken at a seasonable time, pave the way for putrefactive processes. So, too, any food which comes to burden the blood with "crude" humour has this effect, though it is true that sometimes such a food may be beneficial (e.g., cucumber; *c. anguinalis*). That is why people who make use of such aliments, even though they are primarily infrigidant, are likely to develop febrile diseases.

You will also realize that it is when watery humour is not dispersed, but lingers in the blood-vessels, that it usually becomes toxic. However, when exercise is taken before such aquosities have become aggregated, and exercise is taken immediately after eating the fruit, these aquosities will disperse and the noxious effect of the fruits is thereby lessened.

Note too that the presence of "crude" serous humour or of wateriness in the blood prevents the nutrient part of the food from adhering to the tissues, some of the nutritive value of the food being lost in consequence.

A person who partakes of fruit must (therefore) take walking exercise afterwards, and then eat something which will cause the (aquosities) to flow out.

791. Aliments which give rise to (1) wateriness; (2) "crude," raw, immature humour; (3) gross humour, and bilious humour, give rise to febrile diseases. This is because (1) the watery parts permit putrescence to occur in the blood; (2) viscous gross substances close the orifices (of the juice-canals); and (3) the (increase of) bilious humour adds to the heat of the body, and renders the blood sharp.

Bitter pot-herbs are sometimes very advantageous in winter-time, just as tasteless herbs are beneficial in summer-time.

792. *Correctives of unwholesome foods.* If a person is bound to partake of unwholesome aliments, he should do so seldom and sparingly, and should counteract their action by combining with them something of contrary effect. Thus, if a certain sweet food is injurious, he may counteract it by a sour aliment like vinegar, and pomegranate, and an acetous syrup prepared with sour wine and quince and the like, and also by procuring evacuation. Should it be a sour aliment that is injurious to him, he may follow it up with honey, or old wine, taking this before the maturation and digestion of the former are complete. If it be an oily aliment that is injurious, this can be corrected by (*a*) pungent articles, like chestnut, myrtle-seeds, carob bean of Syria, the fruit of the sidr tree, medlar; (*b*) bitters, such as conserved elecampane; (*c*) salt and sharp substances, like

capers, onions, garlic [that is, articles usually belonging to the second course of a meal], and other contraries.

793. If the body is in a state of repletion by unhealthy humours, this state may be counteracted by a liberal allowance of commendable attenuant aliments. If the body is one which is easily purged, moist and easily digested food should be made use of.

Galen says that a humid article of food is nutrient when it is separated from all other qualities, and is as it were tasteless —being neither sweet nor sour, bitter nor acrid, pungent nor salt.

794. A heavy food which is divided up into small portions will be better borne than one which is taken solid.

If dry aliments be taken plentifully, the strength will fail and the colour will fade, and the "nature" become dry.

Fatty food produces lack of energy and vim, and creates a false appetite. "Cold" food produces lack of vim and is infrigidative (or, attenuant). Sour food has the same effect as old age ; it dries the body and makes it lean. Sharp and salt food is injurious to the stomach. Salt food is bad for the eyesight.

If an appropriate aliment is oily, and is followed by an uncommendable aliment, the latter will decompose it.

Viscous aliment experiences delay in passing through the intestine. Citrul [a species of cucumber] passes down the intestine more rapidly if the rind is taken as well than if first peeled. Bread also passes down more quickly if the crust be taken as well than if it be deprived thereof by crumbling it through a sieve.

If a fatigued person, who is accustomed to a mild regimen, should take heavy foods—as for instance, a dish of rice with soured milk—after a long fast, it will come about that his blood becomes sharp in quality and as if ebullient. Hence reducing regimen would be indicated (e.g., blood-letting), though only to a moderate extent. A similar remedy is applicable when a person is angry.*

Note too, that sweet aliment accelerates the "nature" before the food is matured and digested, and the blood is tainted in consequence.

795. *Incompatibilities between foods.* Certain rules must be noted in regard to combining various articles of food. Indian observers and others have long taught that (1) milk must not be taken with sour foods ; (2) fish must not be taken with milk—

* Quick-tempered ; the bilious humour easily becomes dominant or astir.

for in that case chronic ailments such as leprosy* may develop; (3) Pulse must not be taken with cheese or radishes or with the flesh of flying birds; (4) a polenta† of barley-meal should not follow on a dish of rice made with soured milk‡; (5) eatables should not have oil added, or oil which has stood in a brass vessel; (6) fleshmeat should not be taken when it has been roasted over live coals (with certain herbs).

796. *Courses of a meal.* To have several courses to a meal is injurious in two directions: (a) the rate of digestion is diverse, for the part that digests more speedily is admixed with a part which is not yet digested; (b) a person may eat too much of one dish. Already in ancient times, too, persons who had been exercising themselves avoided this error, being satisfied to partake of meat alone in the morning, and bread alone at supper-time.

During the summer it is best to take the (main) meal at an hour when the temperature is cooler.

During a period of fasting the stomach sometimes fills with unhealthy humours.

Note further that when meat is roasted, and taken with onions and eggs [a special recipe 'kabāb'§], it is very nutritious; but it is slow in passing through the intestines, and lingers in the caecum. White soup [a Syrian dish containing rice, honey, onions] is nourishing, and when onion is added it dispels flatulencies; if onions are omitted, borborygmi arise.

Some people consider that grapes are good to take after roasted meats; but the contrary is really the case; they are very bad indeed. So too, is a dish containing dates, figs, and the like. But (dry) pomegranate seeds are good.

Fowl.—The flesh of partridge is dry and constipating; but that of chicken is moist and relaxing to the bowels. Roast fowls are better if they have been prepared (stuffed) in the belly of a kid or lamb (see § 251) because that preserves their moisture. Chicken-broth tempers the humours strongly; more so than fowl-broth, though the latter is more nutritious.

* Two kinds of leprosy are distinguished by the Arabs:—baras and juzām. The former is "white," and the other "black." The latter is leprosy of the joints. Both are ascribed to dietary errors, especially fish-eating and milk-drinking. (Burton, iii. 370). The term used in the present passage is juzām.

† Polenta = sawīq = ptisane (Lane). This is native frumenty and green grain (mostly barley), toasted, powdered, mixed with dates or sugar, and eaten on journeys when cooking is impracticable. It is carried in a meal-sac (Burton, iv. 491).

‡ Soured milk. This is milk artificially soured. It is eaten with rice, and is a component of salātah, cucumber salad. (Burton, iv. 132; who adds, "all nomads who live on milk never take it fresh.")

§ Kabāb. This is mutton or lamb cut into small squares and grilled on skewers. It is the equivalent of our "roast meat." (Burton, iv. 154).

Kid of the goats is better when cold than when warm because the steam quiesces it. The flesh of lamb is better when hot because its unsatisfactory odour is thereby dispersed.

Meat boiled in water and vinegar [a Persian dish] should be served hot, and then needs no saffron in it. But if served cold saffron must be introduced.

Honey confections may be made with dates or wheat flour (sweetmeats); but they are unhealthy because they cause obstructions and evoke thirst.

Bread is an unsatisfactory food when it does not digest, more so than (flesh-food) when it does not digest.

8. RULES CONCERNING THE USE OF WATER AND WINES.

797. WATER* is more suitable for attempered constitutions when it is moderately cold, than when it has been cooled by the addition of snow, especially if the snow were not pure. Even with good snow, there remains the objection that that which passes out from it is harmful to the nerves and the organs of respiration and all the internal organs. Moreover a person cannot tolerate it unless he is very full-blooded, and it will do harm sooner or later, even after the lapse of years.

Certain empirics assert that one must not mingle well-water with river-water, except by taking the one after the other has passed out of the stomach.

We have already spoken about the properties and choice of waters and how to correct them when bad. Addition with vinegar rectifies unhealthy waters.

798. *True and False Thirst.* One should remember that it is very harmful to drink water while fasting, or after exercise, or after the bath, especially when either of these was carried out on an empty stomach. It is also harmful to gratify the false thirst of the night, like that from which drunkards or topers suffer, or when the vegetative power strives to accomplish digestion in the face of a preceding satiety with water. If the thirst be very urgent, the water should be such as has been exposed to cool air, and rinse out the mouth with cold water. If this is not effective, some water may be taken out of a vessel with a narrow mouth. This is sometimes agreeable to a toper, who would not be hurt by drinking while fasting. If a person cannot avoid drinking

* "The usual beverage at meals is water, which is drunk from cooling, porous, earthen bottles, or from cups of brass or other metal. The sherbet is composed of water made very sweet with sugar, or with a hard conserve of violets, or roses, or mulberries, etc." (Lane).¹⁵⁰

A delicious sherbet is made of a conserve of sugar and violet-flowers.

while fasting, let him take water ; especially if he has been taking exercise. In this case, let him first drink wine diluted with hot water.

False thirst is relieved by going to sleep without quenching it with fluid. For during sleep the natural power disperses the matter which is the cause of the thirst, and it does this more effectively if the thirst was not yielded to by a draught. To attempt to allay false thirst by a draught is to interrupt the digestive power, and the false thirst will return later because the humour giving rise to it is still there. When there is false thirst, water should not be taken rapidly and greedily, but through a straw.

799. It is bad to drink much cold water. If it is very imperative to do so, defer it till after a sufficient meal.

Tepid water evokes nausea. Water warmer than that, if drunk frequently, weakens the [tone of the] stomach. But when taken infrequently, it washes out the stomach and opens the bowels.

WINE.

Lane¹⁵⁹ describes as the usual "wine" a preparation made by using dry grapes or dry dates in water to extract their sweetness ; this is allowed to ferment slightly until it acquires a little sharpness or pungency. It was not kept after the third day. (i, 293).

Wine at parties was rather thick, and required straining before use. This was because the wine was cured in vessels whose interior had been coated with pitch (ib. p. 299.)

Virtues of Wine.—"As to the advantages that be in wine—it strengtheneth the viscera and banisheth care, and moveth to generosity and preserveth health and digestion ; it conserveth the body, expelleth disease from the joints, purifieth the frame of corrupt humours, engendereth cheerfulness, gladdeneth the heart of man and keepeth up the natural heat ; it enforceth the liver and removeth obstructions, reddenneth the cheeks, cleareth the brain and deferreth grey hairs." (Night 452 : Burton).

800. White light wine is best for those who are in a heated state, for it does not cause headache. But sometimes it is humectant. It may relieve a headache when that is due to heat in the stomach.

Instead of a light white wine, one may use a wine which has been clarified by infusing honey or bread in it, especially if this is done two hours before the wine is required.

Heavy wine, if it is sweet, is best for a person who wants to put on weight and become strong. But he must beware of developing obstructions. Old red wine is best for a person of cold phlegmatic constitution.

801. It is bad to drink wine after any of the various dishes, for the reason we have already explained. It should not be taken till after digestion, the food having passed into the small intestine. To drink wine upon food forming bad chyme, either during the meal or before it has digested, is bad because it causes the bad chyme to be absorbed and pass into the remote parts of the body. The same is true if wine is taken after fruit, especially melons.

It is better to begin with a small amount than a large one. To take two or even three glassfuls [= $\frac{3}{4}$ pint, according to Lane] upon a meal is not hurtful to anyone accustomed thereto, or to a healthy person who has been bled.

802. Wine is beneficial for persons with a predominance of bilious humour, because it gets rid of the excess of this by provoking the urine. It is good for persons of humid temperament because it brings humidities to maturity. The better its aroma (bouquet) and taste, the more beneficial.

Wine is also very efficient in causing the products of digestion to become disseminated through the body. It "cuts" phlegm and disperses it. It separates off the bilious humour and draws it on into the urine. It renders the atrabilious humours more mobile and able to leave the system. It counteracts the harmful influence of this atrabilious humour by contrariety, and it breaks up all entanglements without the necessity of extraneous heat.

The varieties of wine have been already enumerated in the proper place.

803. Wine does not readily inebriate a person of vigorous brain, for the brain is then not susceptible to ascending harmful gaseous products nor does it take up heat from the wine to any degree beyond what is expedient. Therefore it renders his mental power clearer than before ; other talents are not affected in such an advantageous manner. The effect is different on persons who are not of this calibre.

A person who is weak in the chest, to the extent that winter-time is trying to the breathing, cannot [wisely] take much wine.

804. A person who wishes to take much wine should avoid taking much food beforehand, and the components of the meal should include diuretics. If he should become replete with food or wine, he should procure emesis and take hydromel (=honey and water); then procure emesis again ; then wash out the mouth with vinegar and honey, and apply cold water on the face.

805. If wine has an injurious effect on the body and is heating to the liver, the diet should include some dish containing for

instance the juice of (sour) unripe grapes, and the like, and the articles of food which are generally served with the wine after the end of a meal (dessert) should include such as pomegranate, and tart things like citron.

If the wine is liable to go to the head, one should take less and take it dilute and clarified. After the meal, he should take such as quince with his wine.

If the harmful effect of wine consists in being heating to the stomach, the dessert should include toasted myrtle-seeds ; and one should suck a few camphor lozenges and other astringent and acrid things.

Harmful action of wine.	Remedy.
Heats the body and the liver ..	Bitter fruit, e.g., unripe grape-juice ; the dessert should be pomegranate ; citron.
Goes to the head	Take the wine dilute and clear ; as dessert, cydonia.
Heating to stomach	Toasted myrtle seeds ; suck a few camphor lozenges ; astringents ; acrid things.
Cooling to stomach	The dessert should include galangale, cloves, orange-peel.

806. As you know, old wine is like a medicine. It is only feebly nutritious. New wine clogs the liver and produces a hepatic "dysentery" by giving rise to much gas.

The best wine to take is that which is clear, white, tending to a red tinge, of good bouquet, and neither tart nor sweet in taste, neither old nor new.

A good drink which is widely known is made as follows: take three parts of marjoram, and one of water. Mix well. Boil to a fourth.

"and the host set before him, in vessels of gold and silver and crystal, raisin-wine boiled down to one-third with fruits and spices." (Night 415, Burton).

807. If a gnawing feeling come on after taking wine, take pomegranate, cold water and syrup of absinthe next morning. Enter the bath after partaking of a small meal.

Wine which is thoroughly diluted softens the stomach, makes it humid and allays thirst. Diluted wine intoxicates quickly because the watery constituent takes it quickly into the blood.

808. The wise person will avoid drinking wine when fasting or before the limbs have been refreshed in warm water, or after vigorous exercise ; for both these entail a strain on the brain and nerves, and render a person liable to develop cramp and

amentia ; they produce either actual illness or at least undue heat.

809. *Intoxication.* Frequent intoxication breaks down the constitution of the liver and brain, weakens the nerves, and tends to produce diseases of the nervous system, apoplexy, and sudden death.

When wine is taken to excess it is changed, in the case of some persons, into a bad kind of bilious humour ; or, in the case of others, into pure vinegar. In both cases, the changes in the stomach are very injurious.

Some persons claim that it is an advantage to become intoxicated once or twice a month, for, they say, it allays the animal passions, inclines to repose, provokes the urine and sweat, and gets rid of effete matters.

The most detrimental of the effects of wine is that upon the brain. That is why those who are not strong in that way should take but the very least amount of wine, and diluted.

Treatment. If called to a person who has drunk wine to excess, emesis should be procured as speedily as possible. Failing that he may drink a considerable quantity of water, with or without honey. When emesis has been procured, he should bathe in a full length bath. Then he should be thoroughly rubbed with oil, and left to go to sleep.

810. To give wine to youths is like adding fire to a fire already prepared with matchwood. Young adults should take it in moderation. But elderly persons may take as much as they can tolerate.

Wine is borne better in a cold country than in a hot one.

811. If a person wishes deliberately to take his fill of wine, he must take no food, or anything sweet. The [Persian] "white broth" [made of meat, onions, butter, cheese, etc.] may be allowed ; also grated bread steeped in broth made with fat meat cut into pieces. He should have an inunction. He should avoid physical labour or exercise. Then after the meal, when he wishes to drink, he should accompany it with almonds, salted lentils, and a condiment prepared with salted capers.

It is an advantage to include in the menu cabbage boiled with meat ; olives boiled in water, and the like. For this conduces to drinking more wine. Anything which lightens the fumes of the wine is also helpful—for instance the seeds of Syrian beet ; cummin, dry rue, pennyroyal, Nabathean salt, cardamoms ; and more particularly, any aliments which are viscous and glutinous, for they aggregate the fumes (e.g. oily,

sweet and viscous articles of food) and prevent inebriety in spite of drinking so much wine, by restraining the rapidity with which the wine enters the blood.

Inebriation is rapid (1) when there is weakness of the brain, (2) when there is an abundance of humours ; (3) when the wine is strong ; (4) when the food is scanty ; (5) when the regimen is itself depraved ; (6) when the wine is taken continuously (for a long time).

When the cause of the ready inebriation is weakness of the brain, the remedy is to use the epithemes named in the chapter on catarrh, and give sedatives, and avoid fluids.

812. The following syrup averts inebriety : one part of juice of white cabbage; one part of juice of unripe pomegranate, a half-part of vinegar. Simmer. Take one ounce before taking the wine. The following is another remedy : pills containing salt, rue, black cummin. Eat pill by pill. The following is another.—Take seeds of Syrian beet, cummin, peeled bitter almond, pennyroyal, absinthe, Nabathean salt, cardamom, dry rue.

A person who is not afraid of a "hot" mixture, may take two drams by weight in a draught with cold water, fasting.

813. *Agents which restore from inebriety.* Let the person take water and vinegar several times one after the other, or whey-water and junket. Let him sniff at camphor and sandalwood. Put cold repercussives over his head, such as rose oil and wine-vinegar.

The treatment of inebriety is discussed in the special part.

"He said: 'arouse him, O Sahim.' So he made him smell vinegar and frankincense ; and he cast the Bhang from his nostrils and opened his eyes." (Night 649). To this, Burton remarks : "acids have ever been and are still administered as counter-inebriants, while hot spices and sweets greatly increase the effect of Bhang, opium, henbane, datura, etc."

814. ANAESTHETICS. If it is desirable to get a person unconscious quickly, without his being harmed, add sweet-smelling moss to the wine, or lignum aloes.

If it is desirable to procure a deeply unconscious state, so as to enable the pain to be borne which is involved in painful applications to a member, place darnel-water into the wine ; or administer fumitory, opium, hyoscyamus (half-dram dose of each); nutmeg, crude aloes-wood (4 grains of each). Add this to the wine, and take as much as is necessary for the purpose.—Or, boil black hyoscyamus in water, with mandragore bark, until it becomes red. Add this to the wine.

Burton,¹⁰⁴ (ii. 478), commenting on the word tabannuj (hemp), which is an “anaesthetic” adds, “anaesthetics have been used in surgery throughout the East for centuries before ether and chloroform became the fashion in the civilized West.” (Night 263.)



§ 248. Strictly speaking, instructions on diet to the patient should rest upon practical acquaintance with the culinary art, as having a prior place over the questions of forbidding and allowing such and such articles of food, food values, and the like. The form in which a given article in the dietary is to be given is of real importance, and the combinations into which the foods enter require notice at least to the same extent as is done with the ingredients of a medicinal prescription. Mutual decompositions occur with foodstuffs either before or after ingestion. Interactions may render the “composite” indigestible, or non-palatable, or actually harmful; the use of too little of one ingredient in a recipe or of too much should be prevented; the temperature to which the mixture is exposed—the rate at which that temperature is reached, whether too quickly or too slowly—whether it is maintained steadily or whether through some mismanagement the “mixture” was allowed to cool noticeably in the midst of the operations—all such details call for consideration both as to a possible explanation of persistent gastro-intestinal trouble, and as to guiding the management of any ailment in any system or organ.

The displacement of *materia medica* from its ancient throne is partly to be ascribed to a cessation of attention to detailed knowledge about herbs* and the part which horticultural skill and care, as well as climatic conditions and geographical factors play in the production of efficacious remedies; it is also ascribable to entirely insufficient attention to the preparation of the recipes—for these originally were exacting as to manner of compounding; and both these types of indifference rest upon a scepticism as to the possibility of such details being of the least importance. In the absence of knowledge on these points, the decriers of the use of drugs, and of complex prescriptions speak unjustifiably.

So, again, in the matter of the preparation of the invalid’s food, or the dietary for the chronic ailment, it is reasonable to plead for that care whose real importance is every day proved by those who, having the means, will desire their meals from some one chef in preference to some other.

§ 249. In the whole of the preceding chapter Avicenna is referring to a cuisine which is foreign to us. Perhaps of all European

* It has proved impracticable to include in this volume a translation of the second Book of the *Qanun*, which deals with this subject, and provides a text capable of thorough expansion and adaptation to modern requirements.

countries, Spain offers the nearest approach to his. Those who have been in the East, and have enquired into the practical details in their cookery recipes—not merely such as may be available in written form, but also such as are actually carried out in well-to-do establishments or by the humbler housewife, (for in this country also there is much difference between "Beeton" and actual practice) are more easily able to follow Avicenna's nomenclature.

§ 250. Very little research suffices to convince the enquirer of the very great scope of this subject. Interesting as it is, it would therefore lead too far to attempt proper discussion in these pages. It must suffice to insist that the names of foods and dishes which Avicenna gives bear a different meaning to those same names with which we are familiar. Confusion would only be prevented by giving the names in the original language. Many of the words are Persian; some of the dishes are Syrian; others are Indian.

§ 251. ARABIAN DISHES.—The following notes from Lane and Burton will serve to show the type of dishes which may be regarded as characteristically Arabian.

"Among the more common dishes are the following:—Lamb or mutton cut into small pieces, and stewed with various vegetables, and sometimes with peaches, apricots, or jujubes, and sugar; cucumbers or small gourds, or the fruit of the black or white egg-plant, stuffed with rice and minced meat, etc.; vine-leaves or pieces of lettuce-leaf or cabbage-leaf, enclosing a similar composition; small morsels of lamb or mutton roasted on skewers, called kabāb. (796). Fowls simply roasted or boiled, or boned, and stuffed with raisins, pistachio nuts, crumbled bread, and parsley; and various kinds of pastry and other sweets.

"The repast is frequently commenced with soup, and is generally ended with boiled rice, mixed with a little butter, and seasoned with salt and pepper; or, after this, is served a water-melon or other fruit, or a bowl of a sweet drink composed of water with raisins, and sometimes other kinds of fruit, boiled in it, and then sugar, and with a little rose-water added to it when cool. The meat, having generally little fat, is cooked with clarified butter, and is so thoroughly done that it is easily divided with the fingers. A whole lamb, stuffed in the same manner as the fowls above mentioned, is not a very uncommon dish. (Lane,¹⁵⁹ Nights, i. 171.)

"They brought him . . . dishes of poultry besides other birds and brewises, fritters and cooling marinades." (Night 415, Burton). . . . "a mess of cooked pomegranate seed." (Night, 712.)

"A very common kind of pastry is a pancake, which is made very thin (662), and folded over several times like a napkin; it is saturated with butter, and generally sweetened with honey or sugar; as is also another kind which somewhat resembles vermicelli." (Lane.)

'Adasīyah: soup of yellow lentils, made by boiling them in water till nearly dissolved, and then adding vinegar, coriander, and salt.

Fatūrat: junket: a light food for early breakfast, of which the *Fatīrah*-cake was a favourite item. (Burton, vi. 160.)

Fruits.—Almond, almond-apricot, apple, apricot, banana, bergamot pear, bitter orange, blood-orange, cherry, citron, date, fig, grape, hazelnut, jujube, lemon, lime, lote, mulberry, olive, peach, plum, pomegranate, quince, shaddock, sugar-cane, sweet-orange, sycamore-fig, walnut, water-melon. (Lane, i. 301; Burton, v. 281-287.)

Hişrimiyah.—A broth of kid's flesh, lamb, and fowl seasoned with hişrim, the juice expressed from the grape while unripe.

Jamar: palm-pith eaten with sugar (Burton, v. 284).

Ka'ak al-'Id: "Cake"; bun. A special sweet cake eaten with dates and sherbets. (Burton, iv. 394.)

Kabab (see 796).

Kunāfah: vermicelli cake; a favourite dish of wheaten flour worked somewhat finer than our vermicelli, fried with samn (butter melted and clarified) and sweetened with honey or sugar. It may be sweetened with bees' honey (Night 989) in preference to the frequently used various syrups. (Burton, vi. 150.)

Sawiq. See Polenta (796).

Sikbāj.—Acid minced fleshmeat, dressed with vinegar and honey, or with acid syrup. Raisins, a few figs and chiches were sometimes added. (Lane, i. 435.)

Shurayk.—A cake or bun, the size of the palm of the hand, with two long cuts and sundry oblique crosscuts, made of leavened dough, glazed with egg and clarified butter, and flavoured with spices (cinnamon, curcuma, artesmisia, prunus mahalab, and sundry aromatic seeds—specified by Lane as aniseed, nigella, absinthium (*Artemisia arborescens*) and camphor, etc. (Nights, v. 509.)

Soured milk.—See 796.

Yakhmi.—Stew. A complicated broth prepared from rice and meat. (Burton, iv. 387.)

Zardah.—A rice dish. Rice dressed with honey and saffron (ib. p. 385).

Zirbaj.—A sour meat dish similar to sikbaj (above).

§ 252. The following scheme serves to distinguish differences often overlooked in the popular dictionary definitions:—

WORD.	DEFINITION.
1. Aliment	- Palatable food-material. Raw foods often in their natural state (Dict. syn: food, nourishment) = 15 + non-nutrient, 22 b and c.
2. Article of food	- The ingredients of a "dish." They are sometimes raw, sometimes prepared or manufactured. Any "foods" obtainable at the various shops.
3. Beverage	- Any agreeable liquor for drinking (Dict.)
4. Diet	- (a) 2; (b) exact order and No. of 8.
5. Diet-drink	- A medicated liquor (Dict.)
6. Dietary	- A course of diet; allowance of provisions (Dict.) A list of 2.
7. Dietetics	- A science dealing with 4, 2, etc. Rules for regulating diet (Dict.)
8. Dishes	- The product of a recipe as served on the table, whether cooked or raw (e.g., salad dish, etc.), 2, 4.
9. Drinkables	{ General terms for anything not immediately harmful. Not necessarily harmless after leaving the stomach.
10. Eatables	{ Not necessarily nutritious.
11. Food	- A general term for anything which "being digested nourishes the body" (Dict.). Syn. for literary style; food-material; aliment; nutrient; provisions—but only so applicable loosely.
12. Food-stuffs	- (a) 9, 2 (b) 1
13. Food-material	- Scholast.: a special ex. of "materia."
14. Meal	- A course or series of dishes—"taken at one time." (Dict.)
15. Nutrient	- The actual nutritive substances of which 9, 10, 11, 21 are made. Potential nutrient.
16. Nutriment	- The nutritive subs. which enter the blood (i.e., sep. off by digestion in stomach);

17. Nutritive substance - The chem. subs. known to biochemistry—
 Proteins, CHO, fats, salts as general groups;
 aminoacids, glucose, etc., as specific subs.
18. Potables - - - Same as 3.
19. Ptisan - - - A special form of beverage, medicinal.
20. Provisions - - - Roughly, 2, 3; more exactly, 2 as found in certain
 shops.
21. Victuals. - - - Same as 17; i.e., certain special forms of 2.
22. Waste matters - - - (a) Effete matters if after metabolism; (b) Non-nutritive substances of 1, 2, 10, &c.; (c) entirely indigestible; ∴ never absorbed.

§ 253. Some of the preceding may be grouped as follows:—
 $2 = n(12) + n'(12') \text{ or } n(13)$.

12 chemically contains aminoacids, carbohydrates, hydrocarbons, salts, and metaphysically the four "elements." 2 are taken (a) raw (milk, eggs, salads, fruits);
 (b) prepared in some way (i.) dairy products, confectionery, bakery; (ii.) groceries, spices, condiments; (iii.) flesh food; fish; fowl; (iv.) vegetables; pot-herbs; (v.) special dishes = 8.

8 contribute to make 14.

After the meal has been taken, the food material becomes (a) nutriment—nutritious to a varying degree; (b) effete substances, or wastes.

After circulating these are classified as (a) true nutrients; (b) excrementitious substances (products of metabolism which are no longer of use to any tissue).

9. ON SLEEP AND THE WAKING STATE.

815. The causes of natural sleep and of lethargy, and their opposite states—the waking state, and insomnia;* their effects; the remedial measures applicable when they are baneful; the significance of each; and all other points about them—all these have been dealt with in brief in the appropriate place (386-340). The special treatment will be discussed later.

816. *Physiological effects of sleep.* At the present, we may say that sleep in moderation (1) assists the vegetative faculties in their functions, and (2) brings the sensitive faculties into repose and in so doing (3) renews and restores them, and thereby (4) arrests the dissipation of the breath (the vital power). Hence (1) the digestion of the food in the several stages we have named is accomplished. Sleep also (3) remedies the weakness due to the dispersal of the breath (vital power) in various ways; namely,

* Sleeplessness caused by joy.—"Nor did slumber visit him for the excess of his joy."—(Night 779; Burton.)

by bodily fatigue, by coitus, by anger or violent emotional disturbance, and the rest.

Furthermore, a moderated amount of sleep brings about an equilibrium in regard to quantity and quality of the humours, and therefore it has a humectant and warming action, which is specially advantageous for the aged, who need their moisture preserving and renewing. That is why Galen said "every night I partake of a little packet of herbs—lettuce combined with aromatics ; the former because they induce sleep, the latter because they rectify the coldness of the lettuce." And he said, "I am now careful to obtain sleep because I am an old man, and the humidity which sleep brings is beneficial to me."

817. This then is *the way to obtain sleep*. And if a bath be taken after the digestion of the meal has been completed, and plenty of hot water is poured over the head, this will be an additional help. A still more efficient method will be mentioned under medicaments.

818. *Conditions to observe regarding sleep.* Healthy persons should pay attention to the subject of sleep : it must be moderate, properly timed, and excess must be avoided. And on the other hand they must avoid the injury resulting to mental and all other faculties from remaining awake too long.

However a person is often driven to keep awake, and refrain from sleep owing to a dread of syncope and loss of strength.

The best sleep is that which is deep ; and that which occurs after the food has passed on from the upper part of the intestine, and after the flatulences and eructations which may have followed have subsided ; for to sleep on this is detrimental in many ways, though the person himself may not know of it ; it keeps him turning from side to side in his sleep ; it hinders digestion ; and it does injury. For this reason, if the passage of the food out of the stomach is delayed, he should take a walk for a little while, and then retire to sleep.

It is also bad to go to sleep on an empty stomach, as this is weakening. It is bad to go to sleep after repletion, before the food has left the stomach, because sleep cannot be deep under such circumstances, and the sleeper will keep turning from one side to the other all the time. For when the natural faculties are busy with the work of digestion at a time when it is accustomed to be asleep, the fact of being prevented from waking up is disturbing to the natural faculties ; so they become dulled and the process of digestion is disorganized.

It is also bad to go to sleep during the day, for in this case

illnesses depending on humidity and catarrhal states are brought about ; the colour of health passes off, the spleen becomes heavy, the nerves lose their tone ; lack of vim and a poor appetite are noticed, and inflammatory conditions and fevers often appear.

Among the reasons for the injurious effects are : liability to sudden interruption of the sleep, whereby the natural faculties become dulled.

Among the good qualities of sleeping by night are that it should be continuous and deep. If a person is accustomed to sleep during the day, he should not suddenly discard this custom, but do so gradually.

Burton¹⁰⁴ explains the following : Aylulah, or "beauty-sleep" : slumbering after morning prayers, causing heaviness and idleness. Ghaylulah : dozing about 9 a.m., which leads to poverty and wretchedness. Kaylulah, or "forty-winks," about noon ; the mid-day siesta praised by the Prophet. Qaylulah : sleeping before evening prayers. Faylulah : slumbering after sunset. The last two were held to be highly detrimental (i. 461, footnote).

819. Posture in sleep. The best way to sleep is to begin on the right side, and then turn round to the left. If one begins by lying face downwards, it greatly helps the food to digest, for by this posture the innate heat is conserved and magnified.

It is a bad practice to sleep on the back. It courts the development of grave maladies like apoplexy, paralysis, and nightmare, because the effete matters then tend to accumulate in the tissues of the back, where they are held and prevented from entering the natural channels—which are in front, like the nostrils and palate. Persons who are accustomed to sleep on their backs often become debilitated, for their muscles and members become weakened ; also because one side cannot alternate with the other, seeing that such persons quickly return to the supine position, the back being more powerful than the sides. The consequence is that such persons sleep with their mouth open, for the muscles which keep the jaws closed are too weak to maintain them in that position.

A special chapter is given on this subject in the Special Part.

10. ON CERTAIN MATTERS LEFT OVER TO A LATER PLACE.

820. We leave over till later the discussion of coitus and its constitution, and the measures to be taken to correct errors in this function, though strictly they belong to this place. It is reserved to the Special Part.

At this point also, one would discuss the agents for procuring evacuation of the bowel, and how to deal with any antagonistic influences towards them. We reserve this subject

to the section dealing with treatment and the chapter on purgatives. However, we may say here that a person who wishes to maintain his health should procure evacuations by the bowel, the urine, the sweat, and the sputum.

We shall also explain how one may assist and regulate the menstrual flow of women, in order that you may become familiar with this.

III. HOW THE MEMBERS MAY BE STRENGTHENED. HOW WEAK PERSONS MAY BE MADE STRONGER. HOW TO GAIN FLESH, AND INCREASE THE SIZE OF THE BODY.

821. Members (limbs) which are weakly and undersized may be strengthened and caused to grow and develop during the period of growth, up to the final limit for growth, by the use of a suitable degree of massage and of a suitable form of exercise, steadily persisted in. Also by the use of pitch plaster (see 871). An exercise consisting of holding the breath [according to proper rules] is also effective, especially for the respiratory organs (thorax, lungs).

For instance, let us suppose the legs to be underdeveloped ; the person takes a short running exercise ; then a certain amount of massage is given ; then a plaster of pitch is applied. Next day the running exercise is prolonged a little, but the amount of massage remains the same as on the first day. On the third day, the massage given is to the same extent as before, but the exercise is still further lengthened, taking care to stop short of distension of the vessels, for this would show matters are lodging in them which might be antecedent to some inflammatory process or repletion specifically met with in them : varices, and elephantiasis being an instance of such. Therefore, should there be any suspicion of anything of that nature, shorten the exercise to the original degree, reduce the massage ; enjoin rest in the recumbent position ; raise the affected member. Thus, if the persons have a wasted (lit. dried up) leg, raise it by the foot, and apply massage from its distal towards its proximal end.

To carry this method out for parts related to the organs of respiration—the thorax, for example—we proceed to apply a bandage to the lower parts, making it moderately tight, and of uniform breadth. Then we instruct the patient to exercise his arms, and to breathe as deeply as possible, uttering a loud sound the while,* light massage being applied as well.

* This may be assumed to be a singing exercise, a sustained note being produced for as long as possible at each breath.

This subject will be fully discussed in the Special Part on Beauty Culture, if Allah will.

12. ON THE LASSITUDE FOLLOWING EXERCISE.

822. There are three kinds of lassitude, and we may add a fourth. There are two modes. The three varieties are : the Ulcerose, the Tensive, and the Inflammatory. The fourth variety which we add is the Desiccative or Arefactive.

823. *Ulcerose lassitude.* This is a form in which the subject experiences the sensation of ulcers upon the body or in the depths of the skin. The deeper the sensation the greater is the lassitude. The sensation may be evoked by contact with the skin ; or it may be evoked by movement. Sometimes it gives rise to the sensation of pricking with needles, with a dread of movement, and the subject lies extended because of the weakness of his shoulders and arm-pits. If the degree of lassitude is still greater, there is a goose-skin. When it is still greater, tremors and fever appear.

The cause of this kind of lassitude consists in an abundance of tenuous and pungent effete matters, a liquefaction of the flesh and fat in consequence of the over-vigorous exercise, and, lastly, the presence of depraved humours in the vessels, which results in changes in the blood, whereby it loses its healthy character ; these abnormal products pass into the skin and affect it. This form of lassitude is the lesser evil which such substances produce. If they should become mobile, goose-skin will result. If they move about still more actively, tremors result. Sometimes the pungent humours detach themselves from the others, leaving the "crude" humours in the vessels. Sometimes the "crude" humours are situated in the flesh.

824. *Tensive lassitude.* A person in a state of tensive lassitude has the sensation of the body being broken, of heat, of tension or being in a stretched condition, and has a dread of moving himself or straightening his back from the bent position. This is specially the case when the condition follows physical labour. [Cf. the pain of severe lumbago and myalgia.] This condition arises from the retention of waste matters in the muscles which are otherwise in themselves normal ; it is not due to acridity or gaseous matters in them. The fibres are separated from one another, and there is a state of lightness or heaviness. This is often the result of want of sleep. When not associated with want of sleep, the case is different and more serious. Here the muscle fibres are stretched lengthways.

825. *Inflammatory lassitude.* Here the body is hotter than usual. The part is as if distended, being swollen, and of corresponding colour. Distress is felt when the part is touched, or when he tries to move, for this brings out the tension or stretching [which is like the sensation in an inflamed or bruised tissue : Aeg.]. The deep-seated pain is called *ostalgia*. The cause is abundance of waste matters in the muscles.

826. *Desiccative lassitude.* This is a state wherein one feels a sensation of being dried up in an unusual degree. It follows (a) undue exercise, the chyme being normal ; (b) twisting the body back sharply ; (c) sometimes it is owing to dryness of atmosphere ; (d) deficient nutrition ; (e) fasting too much. [There is great disinclination for any movement : Aeg.]

827. *The two modes of lassitude.* (a) That following exercise. This is less serious. It is rectified by suitable measures. (b) Spontaneous. This is a forerunner of illness. Special measures must be used for its cure.

These two forms or modes may be combined, the matters which give rise to each being present together, both those which arise spontaneously, and those which result from exercise.

828. *Regimen.* The regimen for the simple form is known to you. That for the compound form entails the following rules : In the first place pay most attention to avoid the danger of the condition by dealing with the underlying cause. There may be three sources of danger: severity, the nobility (of the organ), and the substance involved. If two, or three are concurrent, the condition is more serious unless the one of them which outstays the other is more potent and therefore overrules them. For instance, inflammatory lassitude is more severe, and the ulcerose form is nobler ; but if the substance underlying the ulcerose is far from equilibrium and from the natural course, it forms a restraining influence over the two modes of the inflammatory lassitude, in virtue of this nobility and strength, and takes precedence over it. But if the relation be not so very remote, the inflammatory lassitude would take the precedence.

13. STRETCHING AND YAWNING

829. Stretching comes on when effete substances have accumulated in the muscles. For this reason the desire to stretch oneself is often experienced after sleep.

If these humours become superabundant they give rise to goose-flesh and trembling and shivering. If they increase to a still greater degree, fever develops.

Yawning is really a form of stretching, when this takes place in the muscles of the jaws, lips and chest. Should it arise without any apparent reason in a person seemingly healthy, and not at an appropriate time, and to an unusual degree, it is bad. In such a case, it is best when it comes on at the end of digestion, because then it is due to the effete substances being expelled.

Stretching and yawning may be due to external cold, to thickening of texture of the skin (see 839, ii), whereby exit of certain humours becomes restricted ; to being awakened from sleep before it has finished ; to postponing the evacuations.

Moderately diluted wine is good for this condition, provided there is no contra-indication.

14. ON THE TREATMENT OF LASSITUDE FOLLOWING EXERCISE (The First Mode of Lassitude)

830. We may say that the chief object to be attained in treating lassitude is to prevent it from being followed by many diseases, including fevers.

Ulcerose lassitude is dealt with by reducing the amount of exercise if that be the cause. If at the same time there is an over-abundance of humours, they need to be expelled. If there be a transient sensation of nausea and satiety, these effects are counteracted by fasting, evacuation through the bowels, and dispersal of the humours in the subcutaneous tissues* by the use of plenty of light massage, carried out with oil devoid of astringency. Exercise is then resumed. On the first day the nourishment should consist of the usual quality of foods, in lessened amount. On the second day the diet should consist of humectants. If the vessels be patent, and there be "crude" serous humour in the mesentery, friction may help to "mature" it, especially if one could bring the virtue of calefacient medicines (digestives) to bear on it. Very good (caleficients) are : willow oil, ol. anethi ; oil of chamomile ; and the like. A decoction of beet-roots in oil, prepared in a double-vessel ; ointment of mallow-roots ; oil of the roots of cucumber asininus and of bryony ; oil of sweet-scented moss ; and any oil in which the

* Of the total humours of the body a certain proportion reaches the subcutaneous tissues, and may become stagnant in that situation. They require dispersal, and the agents used for such purpose are called "discutients." Possibly some of these agents were what are now called diaphoretics. But it must be remembered that the theory supposes the existence of matters which are discharged either in fluid or in gaseous form, the exit being by different "pores" in each case..

latter (moss) has been incorporated. [Galen recommends discutients and restorative exercise.]

831. *Tensive lassitude.* The object in view in treating this is to relax the indurated tissues by means of a little gentle massage with oil heated in the sun ; tepid baths in which the patient stays a considerable time ; or, better, to take the bath once or twice a day, followed each time by an inunction ; complete rest. If it becomes necessary to procure an abstersion of the vessels, or if the oil of the inunction has become dried up, repeat the inunction and administer moist foods in only small amount. It is more important that the amount should be small in this case than in that of ulcerose lassitude. Exercise is sufficient to disperse this kind of lassitude, and cleanse out [the substances which cause it].

If tensive lassitude have arisen simply by the presence of gross superfluities, these must be evacuated. If it has arisen from flatulencies, it is dispersed by the use of such as cummin, caraway, anise.

832. *Inflammatory lassitude.* There are three aims in treatment of this condition : to relax the tense parts, to cool the heated parts, and to remove the superfluities. These are achieved by the use of plenty of tepid oil, by vigorous light massage, by a prolonged stay in a bath of tepid water (on the warm side), and by sufficient repose [and by repeated inunction : Aeg.].

833. *Arefactive lassitude.* First day : the normal regimen for maintaining health is to be continued, save that the bath-water should be hotter, because very hot water has a contracting effect upon the skin. This action is not as detrimental as that of cold water, for in this case there is a risk of the cold penetrating into the body, already dry. The cause of the wasting (wrinkling, shrivelling of the skin) may also lie in the fact that the skin is usually relaxed (see 818).

The second day of the restorative treatment consists in the use of gentle restorative exercise of a light character. The bath should be carried out in the same way as on the first day, and the patient should then plunge into cold water, to make the skin shrivel, and to reduce perspiration to a minimum. In this way the skin keeps moist. For water will come in contact with the body as soon as there is sufficient heat in it to counteract the dryness of the skin. And these two factors mutually assist one another in combating the injurious effect of the cold. The injurious effect is greater if the person comes quickly out of the water into which he has plunged.

834. Those affected with lassitude need wholesome food, which must contain little moisture, and should be taken at the end of the first morning hour. Friction may be given on a later occasion, towards evening. The supper must then be taken later still.

The removal of superfluities from the body must also be procured, using massage with sweet, or willow oil [cf. the modern ol. betulae, or oil of wintergreen]. The abdominal muscles are not touched unless lassitude is present in them. In that case, give light inunction and increase the amount of such food as is not too heating.

835. One should take care that exercise should stop short of producing any sign of lassitude. Then proceed to reversion exercise in order to draw matters towards the skin by the moderate amount of movement. Having reached the skin, massage during the time of resting between the exercises will finally disperse these substances.

836. A person's condition is the guide, as regards *bathing*. If the bath should induce tremor, the last degree of lassitude has been reached. How much more is this true if fever comes on after the bath ! In such a case the bathing must be stopped, and recourse must be had to evacuation [of various kinds] and the rectification of the temperament.

As long as the water is moderately hot, and the bathing produces none of these adverse symptoms, one knows that it is beneficial to bathe.

837. If there were non-matured humours in the vessels, the first measure to take would be to apply whatever was suitable for the lassitude, and the next would be to endeavour to make the crude humours mature and become attenuated, and then to expel them. If they were plentiful, order rest ; forbid exercise. For rest is the great digestive. Avoid bleeding because by this means both pure and crude matters are expelled.

It is injurious to procure purgation before maturation. There is no harm in inducing diuresis. But avoid drugs which are very heating, for otherwise the crude humour would be caused to diffuse throughout the body, and facilitate its action.

838. *Diet* : include pepper, capers, ginger, vinegar of capers, vinegar of garlic, vinegar of spurge, and dried dates, and the well-known confections (i.e. of quince, apples, prunes, etc.), according to measure.

The appearance of a sediment in the urine informs us that maturation has occurred. One may now order wine to complete

the maturation and to procure diuresis. The wine must be delicate and clear, and must not excite vomiting.

15. ON OTHER STATES WHICH MAY FOLLOW UPON EXERCISE

839. We may first speak about the states, and then pass on to the subject of the regimen applicable for lassitude of autogenous origin.

(i) *Rarefaction of the skin* (turgescence, tumescence, relaxation, flaccidity, the opposite of (ii)). Very often this is the result of insufficient massage, and of bathing. The treatment consists in dry friction, tending slightly to rough friction, using an astringent oil for the purpose.

(ii) *Thickening of the skin* (induration, constriction, tightness, tenseness, shrivelling, sclerosis, corrugation ; see 829). This may be the result of (a) cold, (b) an astringent bath, (c) over-abundance of effete matters, (d) thickening—and aggregation—of coarse particles of effete matters, (e) change in the effete matters [or immatured humours] in the direction of viscosity, in consequence of which they cannot pass through the pores of the skin, and so block them ; (f) exercise, for this draws the humours out from the deeper (or remote) tissues, if no other cause for this has previously been in operation ; (g) residence in a dusty place ; (h) the use of rough and vigorous friction.

When it is due to cold and astringency, the colour of the skin is pale [because it is stretched hard and tight], and the bodily warmth returns only slowly ; sweating is delayed. The skin becomes red again on resuming exercise.—Such cases should be treated thus : the stay in the cold room of the bath must be very short, and the water must not be very cold ; then go into very hot water ; turn the patient from side to side, then on to the belly, then on to the back. The slab on which he lies the while must be of medium heat. Do this until perspiration sets in. Then anoint with thin [sweet : Aeg.] oils of a hot and resolvent character [oil of dill, of black poplar : Aeg.].

Cases due to exercise are distinguished by the absence of the above-named sign. The skin is discoloured by sweat and sordidities. Such cases are treated by getting rid of such superfluities as may be present, and then carrying out a bath and inunction regimen of resolvent character.

Cases due to exposure to fine dust, or due to the use of too much rough friction, are much more in need of the bath than of inunction with oils. Soft friction is to be employed both before and after the bath.

(iii) Rarefaction of the skin may be associated with *weakness* (*asthenia*). This may be the result of (*a*) excessive exercise, especially if subsequent massage were insufficient ; (*b*) over-indulgence in coitus ; (*c*) too frequently repeated baths. The treatment of such cases therefore consists in the use of restorative exercises, and of dry friction, for which an astringent oil is used in order to obtain a hardening effect. The diet should include humectants in small amount, which are moderately calefacient or moderately infrigidant or slightly inclined to be "hot."

The same sort of treatment is used for asthenia, wakefulness, sadness, "dryness" in the nerves (or the state which follows on anger). In such cases, if the patient finds the digestive process of the food is depraved, the reversion exercises are not good ; indeed no exercises are to be recommended.

When the cause of the weakness is an over-indulgence in baths, in eating and drinking, and inactivity, the patient suffers from undue humidity in the tissues (especially the tongue), and the activity of the limbs is impaired. Should this depend on some antecedent cause, the special treatment for that will become necessary.

In the case of any other causes which we have named—wine, undue inactivity, undue moistening effect of the bath—the best thing to do is to anoint the body, use vigorous exercise, employ rough dry friction without oil, or a massage with the aid of a small amount of a calefacient oil.

When a person experiences undue dryness of the skin of the hands, this belongs to the category of arefactive lassitude. The treatment is the same as for that condition.

16. THE TREATMENT OF LASSITUDE OF SPONTANEOUS ORIGIN (The Second Mode of Lassitude)

840. The ulcerose state is recognized when the humour upon which it depends is within or without the vessels. The humour is shown to be within the vessels by (1) the urine being fetid, (2) the nature of the previous diet : for some articles of diet give rise to an undue proportion of superfluous matters in the blood ; some articles of diet give rise to too few superfluous matters ; or these matters are expelled too speedily ; or medicinal treatment may become necessary for them ; (3) the character of the fluids taken : if wine, whether clear or thick.

From all such data one comes to the conclusion that the site is within the vessels ; if they are not found, the condition is extravascular.

841. In cases where the lassitude from superfluities is of extrinsic origin, and the vessels are unobstructed, it is sufficient to carry out reversion (restorative) exercises, and follow the regimen, to an increased degree, which we have indicated for cases of ulcerose lassitude due to exercise. But if the case belongs to the other group, one should not order exercise, but inactivity, sleep, fasting. Then, towards each evening, the abdomen should be anointed with oil, followed by a bath in moderately hot water, if his condition is such that he will stand the bath.

842. The *diet* should be of the character already stated: one which makes good chyme, fluid or semi-fluid [lit. able to be sucked, e.g. through a tube or spout], not viscid, and not particularly nutritious.—Examples of such foods are : barley, frumenty, game (provided it is delicate), syrupus acetosus with honey, mead, light white wine. A wine which is matured and diuretic need not be forbidden, but to begin with one would prefer to administer a wine which is slightly sour or rather yellow. Afterwards one changes to a white and light wine.

843. If this regimen proves ineffective it will show that the excess of humour present needs evacuation. Should it be the sanguineous humour, do a venesection [or scarify the ankles: Aeg.]. Otherwise, procure purgation, making your choice between them according to the proportion of sanguineous humour which you judge to exist. But take care not to do either if the vitality is low.

844. To ascertain the *kind of humour* concerned, one considers the character of the urine and sweat ; and the tendency towards sleep or wakefulness. It is a bad sign if sleep is banished in spite of a good regimen.

845. If one has ascertained that there is a deficiency of good blood in the body, and that the immature acrid humours are in excess, one must not bleed the patient or purge [or let him bathe (Aeg.)], but procure complete rest. Order attenuant foods and fluids ; avoid any fluid nourishment which is calefacient, but choose such as has a sharp or biting or incisive quality : e.g. syrupus acetosus, with honey [acid wines, capers with vinegar and honey : Aeg.]. If it be necessary to increase the power of the attenuants, put a little pepper into the food, and into the barley-water [especially as there is generally hypogastric flatulence : Aeg.]. Cumin and pepper may be needed to counteract the immaturity of the humours (i.e. acrid matters which have not been properly digested)—administering them either before or after a meal, or at bedtime, according as seems best

to you. The dose is a small tablespoonful. Pennyroyal is not so good, for it is over-heating.

846. Now if one is absolutely certain that the immature humours are *not in the vessels* but in the tissues (lit. roots of the members) one orders massage ; laxative oils, especially in the mornings ; heating drinks—whose heat passes to the skin ; a long rest ; then a moderately hot bath. Prescribe pennyroyal fearlessly, whilst being sure to give it before meals and exercise.

847. If it be necessary to aid the gastric digestion before a meal, do not give a strongly penetrative remedy like pennyroyal, but choose cumin and pepper in small dose. Quince may also be used. One could administer more of the latter, if one decides that the extraneous heat of the body would not be much greater in degree by giving it. Beneficial remedies : inunction with oil of chamomile, of aniseed, of sweet marjoram, etc.—whether given alone or combined in wax. Their action is increased by resin, alone or with twice its volume of its oil.

848. When one has ascertained that the immature humours are *in the vessels*, and at the same time outside them, one would become more anxious. Do not lessen your efforts in consequence. If there be as much within as without, first aim at procuring the maturation of the humour ; pepper may be used for this purpose. To that, if one wishes, one may add parsley, and an equal weight of anise. In this way a greater degree of diuresis will be procured. Or, if one so desire, one may admix with it a little pennyroyal, and at the same time lessen the amount of cumin and pepper. These are lessened step by step until at last there remains simply nothing but pure pennyroyal. As soon as the (foreign matter) in the vessels has become digested, and has passed on out of them, one has to deal with that which is exterior to them. Pennyroyal will be useful for this purpose, whereas it was impeditive at first. Where the two conditions occur concurrently one must take special care not to attract the impure matter forcibly towards the surface of the body, or to the interior organs either. Hence one should not risk producing emesis too soon, or purging before the humours are rendered tenuous, and have been “cut” and matured. Exercise is also not ordered.

“The old woman ceased not to ply him with ptisanes and diet-drinks and make him savoury broths till, after the twelvemonth ended, his life returned to him.” (Night 325, Burton.)

849. When the lassitude has passed away, and the colour of the skin is more healthy, and the urine normal (“mature”),

plenty of massage is given and exercise in small amount. One considers whether there is any chance of a relapse, for in that case one would pause in these measures. If it appears that a relapse will not occur, the customary life with regard to bathing, induction, massage, exercise, is gradually resumed. Finally the strength of the ointments used is brought back to the customary.

If a relapse is threatening, with a sensation like that of ulcerose lassitude, the regimen must be taken up again. If the relapse threatens without that sensation of ulcerose lassitude, the treatment is by reversion-exercise.

If the signs are ambiguous, and the sensation of lassitude is not marked, order rest.

850. The cause of *tensive* lassitude is: repletion without depravity of the humour. If the temperament is unhealthy, order venesection and an attenuant regimen. In the type of person of which we speak, the treatment is by attenuants and a certain amount of incisives; after that one helps the cure by using appropriate agents.

851. *Inflammatory lassitude.* Treat by venesection. The choice of vein depends on the part most affected with lassitude, or the part in which the condition began; if it be the head, use the cephalic vein; if the chest or back, use the basilic vein; if the other members are chiefly affected, or there is no distinction of priority, bleed from the median vein of the arm. It may be necessary to bleed on the second or even the third day. On the first day, one bleeds as soon as the lassitude appears, otherwise the condition may become established. The proper time to bleed on the second or third day is sunset.

852. *Diet.* On the first day barley water alone, or juice of frumenty as long as there is no fever. If there is fever, give barley water alone. On the second day give a cooling or attempered oil like almond oil. On the third day give a "salad" made with lettuce or cucumber (or, members of the gourd family), or garden mallow [or, "beet": Aeg.] or sorrel [in cold broth: Aeg.], and give rock fish in white broth (i.e. a special dish or recipe) and forbid drinking [cold: Aeg.] water as much as possible during this day.

If by the third day, the patient feels nausea, or, if he has an appetite but the stomach cannot digest the food, let him have mead, or a light white wine, or an attempered white wine. After the evacuations, take care not to give a great deal of food all at once, for undigested food will be drawn into the blood. This is due to three factors: (i) when there is not much food, the

stomach greedily holds it, and its retentive power is antagonistic to the attractive power of the liver. When food is plentiful, the stomach is not greedy of it, and then its expulsive power helps the attractive power of the liver. The same holds good with each receptacle in turn in regard to that which comes next into play ; (ii) when there is much in the stomach, it does not get digested as well ; (iii) the presence of plenty of food means that there will be much nutriment for the blood, and the vessels [greedily absorb the chyle before it is digested : (Aeg.) and they] themselves are incapable of digesting it.

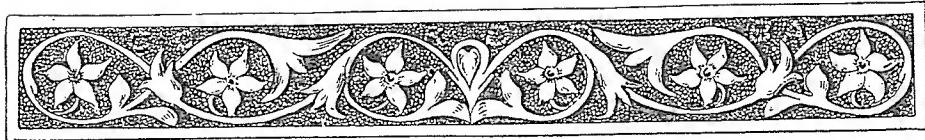
17. CONCERNING THE REGIMEN IN THE CASES WHERE THE TEMPERAMENT OF THE BODY IS DEFECTIVE

853. The temperament (constitution) of the body may be defective either from some deleterious influence, or from the natural course of events beginning from birth. In the former case the temperament was appropriate for a certain length of time, until persistent faulty regimen has produced a change which itself remains persistent. In the latter case the defective constitution has been present from the outset (of conception).

In the first group of cases, the error is in quantity or in quality, and the nature of the case is revealed by a study of the form of the body [physiognomy in the wide sense ; see also Kühne¹²⁸]. The remedy is to have recourse to the corresponding contrary.

The second group of cases shows a depravity of the state of the body, in that there is a change either in the original constitution, or in the course of advancing years of life.

We therefore begin the subject by going into the regimen of old age.



THESIS III

I. GENERAL REMARKS ON THE REGIMENT OF OLD AGE

854. In brief, the regimen appropriate for old people consists in giving those forms of aliment, drink, and baths which render the body warm and moist (i.e. moistening, calefacient food ; warm or hot soft water baths). There should be plenty of sleep, and the time spent on the couch should be liberal—more than is legitimate for adults. The flow of urine should be continually assisted by diluents ; the mucus should be helped out of the stomach by way of the bowels and urine. The nature is too soft, and this needs correcting.

Massage : massage with oil, moderated both in quantity and quality so as to fall short of occasioning lassitude, is beneficial.

Exercise : Walking or horse-riding is taken after the massage. The choice depends on which is too fatiguing. If both forms of exercise are fatiguing, repeat the massage once or twice (instead).

Sleep: the air of the room : some pleasantly redolent aromatic should be used to perfume the air which is breathed, using one which is moderately “hot.”

After sleep, the body should be anointed with oil in order to stimulate the sensitive faculties. After this the horse-riding or walking exercise may be taken.

2. THE FOOD FOR OLD PERSONS

855. Food should be given in small amounts at a time. There may be two, or three, meals a day, divided up according to the digestive power, and according to the general condition—whether robust or weakly. In the latter case, at the second or third hour they may partake of well-baked bread, and honey. At the seventh hour after the bath, they may partake of some one or other of the foods we shall name later, which are laxative in action. At bed-time, some laudable nutriment may be allowed.

When they are robust, old persons may have a rather more liberal supper, as long as they avoid any gross aliment which is likely to give rise to atrabilious or serous humour, and avoid all hot, sharp, or desiccative foods, such as dishes made with vinegar,

salt or hot aromatics, seasoning, pickles, etc. These may, however, be allowed as medicaments.

Should some article of food in the first group have been taken which should have been avoided—such as salted foods, egg-plant, dried salted animal-game-meat, fish with tough flesh, smoked fish—then this must be counteracted with water-melon, and cucumber.

Should one of the other group have been wrongly taken—dishes made with vinegar, salt and strong aromatics (like “fish-jelly,” dishes with pickles, savouries) the remedy is to use the contraries, and select only attenuant articles if one knows that there are superfluities in the body.

When the bowels have been opened, give humectant foods, followed by slightly attenuant foods, as we shall explain. [Olive oil may be given before the meal.]

For persons who like and can digest milk, it is beneficial. One knows that it is well-borne if it does not cause fullness over the liver and epigastrium, or itching, or pain. Milk is good for old persons because it is nutritious and humectant. Goats' and asses' milk are best. Asses' milk is recommended because among its properties is this that it is not cheesy, and it passes quickly through the intestines, especially if salt and honey have been added to it. However, one must be sure that the pasturage is free of pungent herbs, or sharp or bitter herbage and marshmallows, or very salty herbs.

856. Potherbs and fruits specially suitable for old persons : beets, celery [which is good for persons with a gouty tendency or tendency to calculus : Aeg.] ; also a little leek, which may be dished up with tasty aromatics to help digestion ; also olive oil [and pickles, olives, damascenes seasoned with salt : Aeg.]. This is specially chosen to take before the meal, in order to obtain a laxative effect. It is also an advantage to partake of such at bedtime, for they dispose one to sleep.

Ginger, which is really a medicine, is a good condiment for old persons. And there are various other medicines which may be taken as heating confections made with liquid extracts, taking them in sufficient amount to be warming without causing indigestion or being desiccative. It is essential that the nutrients should be humectant, without any likelihood of exerting a drying effect, and that they should be calefacient and help digestion.

857. Among the foods which may be enjoyed are such as are laxative, and congenial to the elderly body—namely, game-birds boiled with water and salt and flavoured nicely with

condiments, and served with oil ; polypody root, which has been placed in chicken-broth or beet-broth, or in cabbage broth.

Articles of food which have a laxative action, appropriate for elderly persons.—For summer : figs and prunes ; for winter : dried figs cooked in water and in honey. They must be taken before food, to have the laxative effect. [Ripe figs are preferable, unless they cause unpleasant symptoms in the right hypochondrium : Aeg.]

858. If the individual has the peculiarity of being one day loose, and the next bound, solvent food-stuffs may be omitted. If the bowels are loose one day, and bound for two days, it will be sufficient to take such articles of food as cabbage water, and a (Persian) ptisan of barley containing bastard saffron, or turpentine gum, to the amount of one, two or three hazel-nuts. All these have the property of relaxing the bowels, and cleanse the interior organs without harm. Another good medicine is one compounded of the kernel of bastard saffron and twice its amount of dried figs. The dose is the size of a nut ; take in a draught.

859. *Purgation in elderly persons.* Another good remedy is an oil enema, for it empties the bowel as well as lubricates the bowel-walls, especially if sweet oil is used for the purpose. The rectum may simply be lubricated with oil. Strong clysters must be avoided because they dry the intestine. A moist unctuous clyster is very beneficial in cases where the bowels have been constipated for several days.

There are also other remedies for procuring gentle motions, and we shall specify these in the formulary.

[Avoid aloetic pills. Strong purges make the constipation worse. Aeg.]

The evacuations in old and decrepit persons must be procured with as little depression as possible, for it is greatly to their advantage to have the bowels opened gently.

If phlegm is engendered in the stomach, remove it by appropriate remedies, and then at once resume the diluent diet. If serous and mucoid waste matters accumulate, remove them by diuresis, and give oil before the meals. (Aeg.)

3. WINE FOR ELDERLY PERSONS

860. The wine which is best for elderly persons is old, red, with warming effect, and diuretic. New and white sweet wine should be avoided, unless a bath is taken after a meal at which such wine is taken, and unless there is thirst. In that case it is allowable to take white wine which is light without much body in it, thus taking the place of plain water.

Elderly persons must shun sweet wines which are likely to prove oppilative [but wines prepared with honey may be allowed even in cases where gout is threatened : Aeg.].

4. THE REMOVAL OF OBSTRUCTIONS IN OLD PERSONS

861. Obstructions are very liable to result from the use of white wine. These may be cleared by the use of pennyroyal, capsicum, and by sprinkling pepper on the wine. Onions and garlic may be taken for the same purpose, if the person is accustomed to take them.

Theriac is also good, especially if the obstruction is recent.

These remedies are to be followed by a bath, by oil, and such aliments as meat-broth with frumenty and barley. Mead is beneficial both when there are actual obstructions or they are merely threatened, and is useful for averting joint-troubles. If there is a sensation of a block in a given member, or if there is a premonition of such, one should combine some diuretic remedy with it, like celery seed.

In cases where the (ureter or) urethra is blocked by a calculus something stronger is advisable, like parsley.

For obstruction in the lung, use hyssop, maidenhair, cassia wood, and the like.

5. MASSAGE FOR ELDERLY PERSONS

862. Massage must be moderate in amount and quality ; feeble or tender parts must not be touched. Between the times of massage, the parts may be rubbed with rough towels (binders), or with the bare hands [i.e. without oil], in order to ensure that the members concerned shall not become enfeebled.

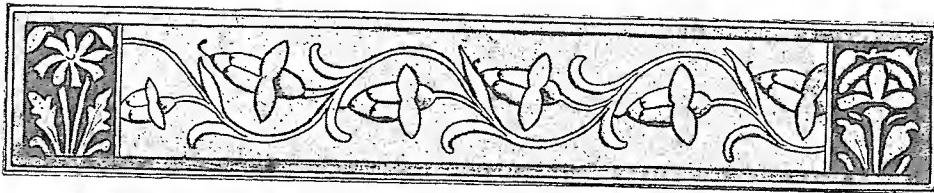
6. EXERCISE IN OLD AGE

863. The factors to consider in regard to exercise in old age are : (1) the different bodily states [of different people] ; (2) the sequelae likely to arise from their ailments ; (3) their previous habits in regard to exercise.

For if towards the end of life the body is still equable it will be right to allow attempered exercises. If one part of the body should not be in a first-rate condition, then that part should not be exercised until the others have been exercised. For instance, if an ailment begin in the patient's head (like vertigo, or epilepsy), or if there is catarrh [nose, throat, etc.], or there is a liability to suffer from the ascent of "vapours" to the head and

brain—then the exercise should not entail bending the head down ; the exercise should be of walking, running, horse-riding, and other exercises involving the lower parts of the body. On the other hand, if the ailment were in the feet, the exercise should employ the upper limbs : for instance, rowing, throwing weights, lifting weights. If the ailment be in the trunk (spleen, liver, stomach, intestines) the extremities should be exercised, supposing there is no contra-indication. If the ailment is in the chest, the lower limbs should be exercised. If the ailment is in the kidneys and bladder, only the upper limbs may be exercised. In these cases the exercises are not to be graduated strictly, as if the members were to be strengthened. In this respect the exercising differs from that for other periods of life. In early old age the same principles apply as for ordinary old age. In other periods of life the weaker members are progressively strengthened by the adoption of exercises for the purpose.

The exercise of members is sometimes allowable in the infirm, sometimes not. Thus it is not permissible if the members are "hot" or "dry," or if there are matters (in the body) which might be drawn down into the limbs by the exercises, and fail to undergo resolution in them in consequence.



THESIS IV

THE REGIMENT APPROPRIATE FOR CASES WHERE THE TEMPERAMENT IS NOT NORMAL

I. ON THE RECTIFICATION OF HOT INTEMPERAMENT

864. We may say that in the case of a hot intemperament (i.e. biliary habit or disposition), either there is an equilibrium of the two passive qualities, or there is either dryness or moisture. When the two passive qualities are balanced, the degree of heat will come to a limit ; it will never be predominant, for that would lead to dryness. If dryness is associated with the heat, the intemperament may be maintained over a long period of time, whereas if the heat is associated with moistness, the intemperament will be of short duration because the moisture becomes predominant and obliterates the "heat." However the heat sometimes comes to predominate and obliterate the moisture, producing desiccation. Consequently, the condition of a person whose temperament shows a preponderance of moisture will become improved towards the attainment of adult life, and then become equable, whereas later in life the extraneous moisture begins to increase and the bodily heat to diminish.

Therefore we may summarize the principles upon which the management of persons with hot intemperament is to be conducted in these two intentions : (1) to restore equilibrium; (2) to conserve the existing state of health.

To secure the first, a patient needs training during the early years of life, the "passions" being subdued in a willing obedience to orderly discipline during all that time. Unless the discipline is orderly there will be a liability to illness. This intention is also gained the more easily if care be taken that the aliment is appropriate for their particular intemperament because in this way the health recovered is also conserved.

865. Individuals with a hot intemperament who are attempered in respect of the two passive qualities, are nearly normal in health at the commencement of life, so that this kind of intemperament makes the teeth erupt early and the hair grow

quickly ; such children will be ready of speech, clear in utterance, and quick walkers. As they grow older, the hotness becomes dominant, dryness increases, and the temperament "biting" [sharp-tempered]. Bilious humour is formed to excess in many of such individuals [as they grow older].

Accordingly, the regimen during the early years is the same as that of attempered constitutions, and as the temperament changes the regimen must be correspondingly changed, seeking to provoke the urine, and help the choleric humour out of the body either by the bowel, or by emesis [and by the urine]. For if nature (i.e. the action of the bowels) alone does not suffice to get rid of the excess of humour, emesis by mild remedies may help to do so—using such as plenty of warm water, either alone or with wine. The action of the bowels is secured by the use of such things as conserve of violet, confection of tamarinds, manna, and Persian manna.

Exercise should be lightened.

Food : only allow such as yields good chyme.

866. Baths : if these are necessary, they may be taken daily or every third day. But in that case nothing heating should be allowed (in the food). If the bath be taken after a meal, and it does not cause distension or heaviness over the liver or epigastrium, there need be no anxiety. But if such symptoms should arise, an aperient should be given. For instance, infusion of absinthe ; a mixture containing aloes, anise, bitter almond, and oxymel. The bathing after food should also be stopped [and the diet should be light, with deobstruents and viscid articles of food (Galen)]. These aperients are to be given at the end of the first stage of digestion, and before the second stage is completed. But there should be a certain interval of time between the aperient and the next meal—namely the interval between the morning exercise and the time for the bath. Inunction with oils is required, and a light white wine should be given. Cold water has a useful (weakening ; strengthening : marginal reading) influence.

All these suggestions apply specially to those whose temperament has been hot and dry from birth.*

* Galen adds : "If bile passes down plentifully, good ; but if it regurgitates into the stomach, vomiting will become inevitable, and tepid water should be taken. Exercises should be done before meals ; and they must be slow and gentle in character.

Gymnastics are not required by persons of very hot temperament ; walking exercise is enough. The baths may be taken after a meal in such cases.

If the temperament is hot and dry, the regimen should be diluent (succulent food—bathing—avoid much or strenuous exercise).

During the summer, the bath should be taken early, and repeated after (the main) meal. Cold drinks may be allowed.

867. Those who have a hot and moist temperament show a tendency to (abnormal) decompositions in the various matters, which also tend to descend into the limbs. Such persons should take exercise of a kind which will favour dispersal (of humours), but is mild enough not to prove over-heating. A degree of activity likely to cause "ebullition" in the humours must be avoided.

A person who is not accustomed to much exercise should eschew it. Exercise should be taken after the bowels have been evacuated. Baths should be taken before the meal. Care should be taken to get rid of all superfluities (quickly).

When spring approaches, moderation should be observed in bloodletting and purgation.

2. THE RECTIFICATION OF A COLD INTEMPERAMENT

868. There are three kinds of cold intemperament. (1) When there is a balance between the two passive (qualities), the intention is to produce more innate heat by means of (a) hot aliments which are moderately moist and dry; (b) calefacient inunctions; (c) large electuaries; (d) evacuation of the corresponding humours; (e) baths likely to induce sweating; (f) exercises contributory to sweating.

(2) At some periods such persons may be attempered in regard to humidity, and yet it sometimes happens that the coldness gives rise to humidities.

(3) In those individuals in which there is dryness as well as the cold intemperament, the regimen should be prescribed as for old age.

Aegineta adds : "the dry kind is the worst, because this is the form characteristic of old age. Warming agents and diluents are needed (namely, moderate exercise, moist heating food, heating wines, plenty of sleep). The bowels should be emptied daily. Venery should be avoided.

The moist kind is "bad," because there is a liability to rheumatic affections. Here avoid bathing, and take light exercise often, and make use of moderately calefacient inunctions.

If the temperament is dry, avoid : tiring exercise, exposure to the sun ; prolonged wakeful state ; cares ; venery.

If the temperament be humid, more exercise is necessary, and the digestion in the stomach needs assistance, and also the urinary secretion. Rheumatic and plethoric complaints are liable to occur. The bath should be taken before meals, and twice or three times in the day. Aperients and diuretics should be given before food. Masticatories, cathartics, and diuretic wines are allowable.

3. THE REGIMENT FOR PERSONS PRONE TO ILLNESS

869. When persons are prone to illness, it is because of (1) repletion ; (2) the presence of immatured humours. In

the former, the quantity requires modification ; in the latter the quality of the humours needs modification.

(1) The quantity of humours is modified by modifying the amount of food taken ; by increasing the exercise ; by massage before the bath (if the person is accustomed to exercise and massage ; otherwise these must be mild) ; by dividing the meals so that the food is not all taken at one time, and to satiety. If the skin acts very readily, and the inducing of sweating is customary, this may be procured. If the fact of the meal being taken slowly does not result in the pouring out of bilious humour into the stomach, the meal may be taken after the bath. But if it should do so, the meal should be taken before the bath. In the former case, the proper time for the meal is after the fourth hour.

But if bilious humour pours into the stomach, the meal is taken before the bath, and further, if there are symptoms of congestion in the liver, those among the above-named aperients which are appropriate to the temperament are administered. Should there also be symptoms pointing to (congestion in) the head, walking about is of assistance. If the food undergoes putrefaction in the stomach, and then passes on, no matter ; but if it do not pass on, one must administer cumin, or figs mixed with bastard saffron seeds. An electuary of this is named [in the Formulary].

4. To HELP LEAN PERSONS TO PUT ON FLESH

870. The chief cause of emaciation, as we have said, is a dry intemperament, dry mesentery, and dry atmosphere. When the mesentery is dry, it will not absorb nutriment, and this renders the degree of dryness and wasting still greater.

Note that emaciation, leanness, or wasting is here understood as including the condition of a person convalescent after a long illness.

Other causes of lean habit of body : attenuant regimen, attenuant medicines ; mental anxiety in a person of dry temperament.

"I observed a youth wasted with sickness, as he were a worn-out, dried-up waterskin. And as I looked on him, lo ! he repeated these couplets. . . ." (Night 410). The sickness here referred to is a frequent event among the lovers in these tales, being the effect of abstaining "from meat and drink, and being estranged from the solace of sleep" (Night 114), an effect proportionate to the mental anxiety arising from the pain of parting. The descriptions are graphic enough, and are equally applicable to cases of wasting from organic disease.

A warm temperament also predisposes to leanness. Fat persons are of cold temperament, and are therefore benefited if made "warm."

871. Baths. Before taking the bath, the skin is rubbed with linen cloths to a degree between rough and gentle, until the skin becomes red. The rubbing may then be more vigorous.

After that, a pitch plaster is applied* [for three or four days : Aeg.]. The object of the massage before the application of the pitch plaster is to prevent the puffing of the tissues from subsiding again. Exercise is to be moderate. The bath follows at once. The skin is dried with towels. Then massage is given, using [emollient (H. A.)] oils. Lastly, a meal of suitable type is given [fat meat, pulse, almonds, bread : Haly Abbas].

It will be seen that in this regimen, the bath is taken on an empty stomach. It will be noted that the rules regarding bathing state that a person is made thinner if he takes his bath after a meal, before the food has digested.

If the age, season, and custom allow of it, cold [tepid : Aeg.] water may be douched over the person.

Sleep should be encouraged. (Haly Abbas).

Emotional Life.—Pale persons who are poorly nourished would become stouter if they were aroused to anger, and mental excitement. (Aeg.)

If only a part of the body is wasted, as for instance after fracture, the vital powers must be stimulated ; moderate friction will encourage the circulation in the part, and warm water is douched over it in small quantities, until the skin reddens and swells. Suitable exercises are also carried out. Pitching may be done. If the part feels cold, friction with linen cloths should be done, or some mild calefacient applied, like thapsia made up with honey or wax. (Oribasius).

The above regimen is almost identical with that which we have spoken of for increasing the bulk of an undersized member. The completion of the subject will be found in the fourth book, when discussing beauty culture.

5. How to REDUCE OBESITY

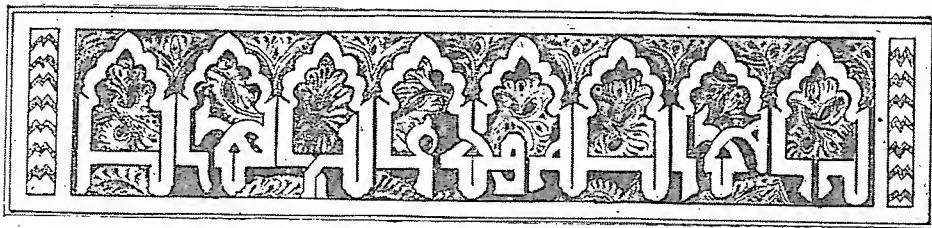
872. The regimen which will reduce obesity. (1) Procure a rapid descent of the food from the stomach and intestines, in order to prevent completion of absorption by the mesentery. [One may take saltish things of laxative nature : Rhazes.] (2) Take food which is bulky but feebly nutritious. (3) Take the bath before food, often. [Take not food immediately after the bath, and a short sleep ; follow up the bath with massage ; make a long stay in the bath : Haly Abbas.] (4) Hard exercise. (5) Resolvent oils. [Rub in oil containing root of wild cucumber, marshmallows, gentian, all-heal root, birthwort root, poley, and centaury ; volatile ointments ; oil of dill : Aeg.] (6) Electuaries : the lesser myrobalan electuary ; electuary of lacca ; "theriac." (7) Take vinegar, and salt, while fasting.

* "Pitching" consists in rubbing into the skin a preparation made by melting dried pitch in a little oil, and warming it to a consistence suitable. The skin must be shaved first. The plaster is then removed before it has quite set. It is then warmed again and re-applied. This is repeated several times. (Aetius).

Bituminous and sulphur baths may be used with advantage. (Rhazes.)

The subject is further discussed under the heading of beauty culture.

Other details: (Aeg.) :—*Meals*: only one a day. *Drinks*: take a fragrant draught before a meal. *Wines*: use thin white wines. *Sleep*: must not be protracted. *Baths*: use natural diaphoretic waters; if these are not available, add flower of salt to a sea-water bath; or add a large quantity of nitre. *Sandbaths*. *Massage*: dry rubbing with thick towels; rub with rough salts, such as nitre. *Medicinal Agents*: attenuants, that is, medicines which attenuate the humours; wild rue seed and tops of macedonian parsley, various strong diuretics, with or without pepper, and with or without asarabacca and anise; also the other remedies named in brackets above. Winter favours the formation of flesh and blood.



THESIS V

THE CHANGES IN THE ATMOSPHERE

THE REGIMENT ACCORDING TO THE SEASONS, AND THE VARIATIONS OF THE ATMOSPHERE

873. SPRING. At the onset of Spring one has recourse to bleeding. Cathartics are taken according to requirements and custom. Emesis should be induced. [Spring fills the system with humours (Rhazes)]. *Diet* : avoid very heating and moistening meats and drinks ; use attenuant articles of food. *Exercise* : in moderation, but in greater amount than is proper in summer-time.

Too much food should not be taken at a time ; the meal should be divided over a period. As to drinks, take diuretic syrups and robs. *Avoid* hot, bitter, salt, or sharp things.

874. SUMMER. [Summer dissolves the humours and weakens the vitality (Rhazes).] Eat sparingly of foods. Moderate the drinks. Moderate the exercise. Take sufficient rest. Use diuretics plentifully. If emesis is possible, it is advisable. One should keep in the shade, under cover. The food should be infrigidant. [Avoid wine and venery (Rhazes).]

875. AUTUMN ; the season when the weather is changeable and unsettled. [Autumn engenders bad humours, bilious and sanguineous (Rhazes).] A more liberal regimen is here needed, if health is to be preserved. *Avoid* : desiccant agents ; sexual intercourse ; drinking much cold water ; cold shower baths ; sleeping in a cold place (cold enough to excite goose-flesh) ; retiring to sleep on a full stomach. It is advisable to protect oneself from the midday heat and the early morning cold breezes. Fruits are to be avoided, or at least taken only in small quantity [they supply bad chyme, and engender flatulencies (even figs and grapes do this) unless taken before food]. In bathing, only tepid water may be used. [Exercise should be moderate.]

During the time of the autumnal equinoxes, evacuations

should be procured in order to ensure that the excrementitious particles shall not be held back in the system all winter. Although for some persons it is better to see that the humours are kept "on the move," it is usually best they should keep in repose.

As the age advances, emesis must no longer be procured in autumn lest fever should be encouraged to develop.

Wine must be well-diluted, and restricted as much as possible.

You may be assured that if the autumn is a wet one, there will be little likelihood of the usual autumnal disorders coming on.

876. WINTER. There should be plenty of physical work. Eat liberally, if the prevailing wind is northerly. If southerly, increase the exercise but diminish the amount of food.

Diet. The bread should be made heavier in winter than in summer. The same applies to flesh-meat, roasted meat, and the like. Potherbs : take cabbage, beet, celery. *Avoid* orach, red barley, purslane, endive.

[Aegineta allows acrid potherbs, and states that heating substances like pepper, cummin, mustard, rocket, may be taken liberally. As regards wine, he says more wine may be taken this season, using the strong and heating kinds.]

When the body is healthy, illnesses are unlikely to come on during the winter. Should they do so, however, the appropriate treatment should be used, including purgation if that is necessary. Illness will only arise under strong provocation, the agents being usually of a "hot" quality. The reason is that the innate heat, which is the determining factor, is very strong during the winter, because the cold prevents its dissipation, and collects it among the interior organs. Furthermore all the vegetative faculties are more efficient at this season.

Hippocrates favoured purgation to blood-letting. He was against procuring emesis during winter, though approving of it during summer, on the ground that the humours of the body are now on the move whereas in winter they tend to stagnate. One may use this fact as a pattern.

877. When the atmosphere becomes pestilential in character, the body should be given a desiccant regimen, and the dwelling-house should be constructed so as to be able to be kept cool and dry. When contagious diseases are abroad, the air should be warm, and charged with agents which prevent decomposition of the air. Things which emit pleasing odours are good, especially if they are contrary in temperament to that of the atmosphere.* Besides this, during times of pestilence, one

* ". . . had perfumed the place with musk, and aloes-wood, and ambergris." (Night 733.)

should not allow draughts, but ventilation should be secured slowly, by means of small fans and ventilators.

Very often air is contaminated from the soil. In this case it is well to sit on couches (instead of on the ground) and to seek out dwellings on ground which is as elevated as possible, so that the winds traverse them.

Very often, too, the air itself is the seat of the beginning of the decomposition changes—either because it is contaminated by adjoining impure air, or by some “celestial” agent of a quality at present unknown to man. In that case it is best to retire to underground dwellings, or to houses enclosed in walls on all sides, or to caves.

Fumigations may be used to purify the air : sedge (or, galangale), frankincense, myrtle, rose, sandalwood.

During the time when pestilences are about, one may use vinegar in both food and drinks, for this preserves one from the danger.

Other details will be discussed in the special part of this work, in order to complete the subject.



THESIS VI

I. THE SYMPTOMS PREMONITORY OF DISEASES

878.

Symptom.	Remedy.	Danger.
Tremor of the heart continuing persistently	—	Sudden death.
Nightmare, and vertigo frequent.	Evacuate the gross humour	Epilepsy; apoplexy.
Jerking movements of the whole body.	Evacuate the serous humour.	Convulsions; apoplexy.
Ditto, persisting long enough to affect vision and bodily movements. Also plethora.	Ditto.	Ditto.
Loss of sensation in the limbs	Ditto.	Paralysis.
Much twitching of the face ..	Procure cranial depletion.	Trismus.
Face becomes very red ; tears flow ; vision fails ; headache.	Blood-letting purgation, etc.	Insanity ; delirium.
Inexplicable sense of gloom and dread.	Evacuate the oxidised humour.	Melancholy.
Face reddens, swells, and darkens and keeps so.	—	Lepra.
Body heavy and relaxed ; veins prominent.	Bleeding.	Rupture of a vessel; apoplexy ; sudden death.
Face, eyelids and limbs slightly tumid	Treat the liver.	Dropsy.
Great stench from the faeces..	Treat the putrescence in the vessels.	Fever.
Offensive urine	Ditto.	Ditto.
Lassitude and loss of spirits ..	—	Fever.
Loss of appetite ; undue appetite.	—	Illness (in general).

In short, when any of the functions are abnormal in some way—appetite, defecation, urine, sexual desire, sleep, action of skin, itching, keen mental faculties, violent temper, unusual tastes, nocturnal pollutions—whether the abnormality is an increase or a decrease of function, or of quality or of character, one may be forewarned that some disease is on the point of supervening. Unusual events have the same significance. For instance, bleeding of piles, menstrual flow, vomiting persisting, nose-bleeding, craving for something, whether bad, or apparently good because in a way natural. For this reason one should not abstain from desired foods or things unless they are entirely bad, and even then, the abstention should take place gradually.

Some special symptoms denote particular conditions. Thus, persistent severe headache, and dilation of the pupil warn of cataract. The following are also forerunners of the same disease : imagining that there are bodies like insects, etc., in front of the face when one is sitting still and motionless ; great impairment of vision.

The following are also noteworthy :

Description.	Morbid state corresponding.
Heaviness and stabbing in right side	Liver disease.
Heaviness and tightness in sacral region and lumbar region ; urine abnormal.	Kidney disease.
Colourless stool	Jaundice.
Persistently scalding urine	Vesicle or penile ulcers.
Burning pain in anus on defecation	Dysentery.
Anorexia, vomiting, distension, pain in legs	Colic.
Pruritus ani, not due to worms	Piles.
Eruption of many boils and pimples	Internal imposthumous. Rupture of an abscess.
Serpiginous eczema (ringworm)	Leprosy ; black vitiligo ; white.
White morphew	White vitiligo.

2. GENERAL REMARKS ON THE REGIMEN SUITABLE FOR TRAVELLERS*

879. A person who is about to make a long journey must accustom himself to do without many things which are available in his own home, and must be prepared for hardships and pains. He must therefore take precautions against many illnesses [including fevers: Rhazes] to which he is exposed, if Allah will. He must be specially careful about diet and to avoid lassitude (a consequence of fatigue).

Persons of humid and phlegmatic temperament are not liable to develop fever from exposure. (Rhazes.)

880. Preliminary Measures. (i) Bodily state. One should not set out upon a journey when in a state of sanguineous or other plethora. A purge should be taken first. [If the journey is likely to be arduous, a bleeding should be done also : Aeg. — The body is rubbed with oil (Haly Abbas).] If there is a sense of nausea, due to indigestion, one should fast, and then sleep till the nausea has passed off, before proceeding on one's journey.

(ii.) Hygiene of body : it should be anointed with oil (ib.)

(iii.) Dress : A binder should be worn. This is at least five cubits in length, and six or seven fingers' breadth. This is applied round the loins, and the hollow of the ribs. The head must be covered. Take also a staff, as a help both in descending and ascending hills. (Haly Abbas).

* The matter in this chapter has been slightly re-arranged.

(iv.) Care of the eyes (from snow and dust) : Expose them to the vapours produced by pouring wine on a heated stone, or to those of chamomile, dill, or marjoram. (Rhazes.)
 (v.) Care of the feet. Wrap them in cloths smeared with calefacient oils. (ib.)

(vi) Sleeping and Fasting. If it is necessary to travel on without sleeping, the habit of doing with little sleep should be acquired by preliminary practice. Similarly, if there is a likelihood of long fasts and of long abstinence from fluids, a habituation to this should be made first. One should also accustom oneself to the kinds of foods one is likely to be able to obtain during the journey—foods of high degree of nutritive value, and taken in concentrated form.

Instructions differ according to the season of the year in which the journey is being made.—In winter, a purge should be taken before starting. The binder should be longer than above stated. The body is not to be anointed at the stages in the journey.—In Summer, the body must be covered to protect it from the sun. The binder is to be as stated above. (Aeg.)

881. Exertion. The exertion which a journey entails should be met by making the first day's work very little more arduous than that customary ; and so grade the exertion day after day.

882. Diet. The food must be concentrated and of good substance, and allotted into rations which are not too bulky, so that digestion will be well completed, without leading to the accumulation of effete matters in the blood. Should hunger be very pressing, let the traveller take a snack of a quality appropriate for his temperament, and unlikely to induce thirst. This rule applies whether the journey be by night or by day.

Rhazes suggests chewing pickled onions en route, to assuage hunger. Note that night-time is preferred for travelling across deserts, or in hot countries generally.

Potherbs and fruits are to be eschewed, as also any articles likely to engender “crude” humours, unless such articles are required for medicinal purposes.

883. The traveller should not resume riding immediately after a good meal, because the food would then undergo decomposition, and thirst would arise. Then, after quenching the thirst, rumblings and distension of the stomach would supervene, and there would be nausea with satiative indigestion. Therefore, instead of so doing, one should wait till the time for alighting at the hospice, unless there is some special reason for doing otherwise, as presently to be stated.

884. A person may have to fast so long that the appetite is lost. To aid one in submitting to this, the following are useful: cold foods prepared from roast livers and the like, pills

prepared with viscid or glutinous substances, strong fluid fats, almonds, and almond oil. Certain fats like that of beef will stave off the feeling of hunger for a long time. There is a story of a man having swallowed a pound (12 ozs.) of oil of violets in which fat had been dissolved until the oil was of the consistence of a plaster ; he is said to have been free of desire for food for ten days.

885. *Precautions against thirst.* One may adopt a similar plan (to the preceding) when one knows one will have to suffer long from thirst. It is therefore advisable to inform oneself of those medicinal drinks which will abolish thirst, and are named in the third Book, in the chapter on "Thirst." A specially good medicine of this kind is furnished by dissolving three drams of purslane seed in vinegar.

Avoid any foods which are likely to evoke thirst. Namely, such as fish, capers, salted foods, sweets.

Converse as little as possible. Make the rate of walking gentle.

If there is a shortage of water, it is a good plan to add vinegar to it, for this allays thirst.

Rhazes gives : " Water with polenta sprinkled on it, and a moderate quantity of salt." Or, hold cool liquid in the mouth ; pour cold water on the hands and feet.

Fatigue ; Lassitude. This must be treated according to the chapter on that subject.

At the end of a journey.—Take a comfortable apartment ; do not go near the fire. Rest.—Do not go to sleep for an hour. After that, the bath may be taken. Massage is then given till the skin is all ruddy. Then the traveller may go to sleep on a soft couch. (Rhazes).

3. REGIMENT APPLICABLE WHEN EXPOSED TO GREAT HEAT, ESPECIALLY WHEN TRAVELLING ; REGIMENT SUITABLE FOR THOSE GOING TO HOT CLIMATES

886. The things to guard against are : asthenia, loss of bodily vigour, muscular weakness ; insatiable thirst ; sunstroke.

Therefore the head [and body : Aeg.] must be protected from the sun. Those who are making journeys must protect the chest, using an application composed of such things as mucilage of fleawort ; purslane juice.

Persons about to journey into very hot regions will need to take something like barley-meal cakes, and fruit syrups, before starting off, for to ride on horseback (or camels) entails an unperceived loss of strength and vitality, if the intestines

are empty, with nothing to replace the void. Therefore it is advisable to partake of such things as we have named in small amount, and wait awhile to give them time to pass out of the stomach, and so ensure that there will not be any splashing about of its contents.

One should use oil of rose and violets on the journey, anointing the back with them from time to time.

The injurious effect of travelling in the heat may be alleviated by having a swim in cold water, but it is best not to plunge in suddenly. One should wait a while and enter the water gradually.

887. If there is a risk of simooms, the nostrils and mouth should be covered, and one should go about in that way. Before being exposed to such a danger, one may eat onions with buttermilk and without butter ; or, better still, onions infused for a night in the milk ; and one may eat onions by themselves as well, and take the buttermilk after them. Before steeping the onions into the buttermilk, deep incisions should be made into them.

Another remedy is to make use of some fragrant substance like rose oil, and the oil of gourd-seeds. The latter may be sucked (as a lozenge) because it mitigates the ill-effects one fears.

888. If the sun-stroke has already occurred, let cold water be thrown over the limbs, and lave the face with it. Pour cooling oil like rose oil over the head, and also willow-oil, and cold juices like that of houseleek. Then lave. Sexual intercourse must be avoided. The rations should consist of cold pot-herbs. Salted fish is also appropriate, the person resting the while. Diluted wine is advantageous. If there is no fever, milk is the best food of all. But if there is fever (not of a putrid type, but of a one-day type), sour buttermilk should be given. If there is thirst after sunstroke, rinse the mouth with cold water. Water should not be swallowed to repletion, because of the risk of sudden death [from shock] thereby. The rinsing of the mouth should be done with moderation. If, however, there is an excessive craving for fluids, allow the patient to sip a little at intervals. Such thirst being due to the previous exertions, let him rest, and then drink. But it would be better to take rose oil with the first portion of water, and take the ordinary water after that.

In brief, when exposed to heat stay in a cool place ; lave the feet and hands with cool water. If thirsty drink cold water by sips. The food should be such as is readily digestible.

4. THE REGIMENT FOR THOSE TRAVELLING IN OR TO COLD CLIMATES AND ICY COUNTRIES

889. I consider that it is a very fearsome thing to travel in the intense cold, even if one takes great care and protects oneself by every possible precaution. So how much the more is it fearsome if the person has made no preparations at all ?

How many travellers have taken every possible precaution and have yet died from the exposure to cold, and the cold winds, worse because there is no rain—dying in convulsions, or tetanus, or were frozen to death ; or died with apoplexy, or died in the manner of persons who have been poisoned with opium or mandragore ?

And even if the condition to which they are reduced is not fatal, they often experience the pangs of hunger, as what is called bulimia—the treatment for which is described already in the proper place, along with that for other disorders of the same class. The best thing to do is to plug the nostrils and other apertures, and protect the mouth so that the cold air does not enter at once (into the lungs). The exposed parts must be protected in the way we shall describe [in 894].

890. When the traveller in bitterly cold places has reached his halting-place, he should not approach a very hot fire at once, but gradually by degrees, beginning with a slight warmth, and slowly going nearer to the fire, though it would be better not to do that at all. However, even though the need of warmth is very great indeed, the approach must be still made gradual.

The traveller may push on quickly if he so wish, if the exposure to cold is not affecting him adversely, or depriving him of energy.

891. *Frostbite.* A person who has become frostbitten must be attended to without delay ; he must be warmed and the vitality restored by calefacient oils, especially those which possess the properties of theriac, like oil of lilies.

When the traveller has reached an inn, and is an hungered, let him partake of something warm ; he will get wonderfully warm, with fever-like heat.

892. *Provisions to take.* Certain kinds of provisions would enable the traveller to endure the exposure to cold more easily. Thus, any prepared foods containing plenty of garlic, nuts, mustard : asafoetida. “ Lactic ” cheese made up with barley (meal a special recipe) may be added in order to impart a pleasing taste to the garlic and nuts. [Pickled onions may be chewed (Rhazes).] Butter is also a good thing to take, especially if wine

be drunk afterwards. Wine should be taken instead of water. One should take rest until the wine has come to rest within the body, and gives the sense of warmth.* He may then mount and continue his journey. No one should go out into the (bitter) cold on an empty stomach ; he should have taken plenty of nutriment.

Asafoetida is among the things which have a warming effect, when one is frozen with cold ; especially if wine is given at the same time. The initial dose is one drachm (12 = 1 oz.) of asafoetida to 1 lb. weight of wine.

893. The body may be protected from injury by the external cold by the use of epithemes, made with oil (pitch or tar). [The loins, spine, and chest may be bound with a long swathe, to protect them (Aeg.).]

Garlic (as an epitheme, **894**) is among the things useful for those exposed to a cold atmosphere.

Care of the eyes and feet. (See **880**.)

5. ON PROTECTING THE LIMBS FROM THE INJURIOUS EFFECTS OF COLD. FROSTBITE

894. The limbs should first be rubbed until they grow warm. Then use a warm liniment compounded with pleasantly smelling oils like that of lilies, and oil of myrobalan (benzoin). Syrup of lily flowers combined with aromatics. If this is not to hand, take oil, especially oil into which pepper, or pyrethrum, or euphorbium, or asafoetida, or castoreum have been placed.

Epithemes may be applied to the limbs to protect them from the cold, using galbanum, garlic, aided by pix liquida, for instance.

The foot-wear must not be so tight as to compress the feet, for freedom of movement is the best means of protection from cold, whereas restriction of movement interferes with (the circulation) and makes the limb cold. It is also a good plan to cover the feet with parchment, and wear fur over that.

If the hands or feet are not aware of the surrounding cold, so that one does not take the proper precautions against it, it is a sign that the sensation is already being lost, and the frost is already exerting its harmful action upon it. In such a case there must be no hesitation in action. For you know that once the (freezing) cold penetrates into a member, not only is the innate heat extinguished, but the very substance on which that

* Rhazes advises *hot* wine as a drink before setting out.

heat depends is destroyed (dissolved, *tahallul*). The tissues are then at the mercy of putrefaction. So there is an urgent need for all those measures which have been discussed in the chapter on ulcers, especially the grave eroding ulcers. If the degree of action is still short of the stage of putrefaction, the best thing is to place the limbs in snow water, or into water in which figs have been boiled, or cabbage, or myrtle (i.e., odoriferous things), or into dill water, or chamomile water. All these are beneficial. A good local application is made with pennyroyal. Wormwood of Pontus, and betony, and turnip are also good medicaments for the purpose.

One must avoid exposure to direct heat.

It is also necessary to walk about quickly, moving the feet and limbs, doing exercises with these, and also applying friction, and inunction. Warm water may be poured over the part from a height, along with the other aforesaid measures.

895. It is important to realize that to allow the limbs to be still and motionless in the cold air, without exercising them in any way, is the surest way to subject them completely to the intense cold. Some people, however, actually make use of cold water for the purpose of overcoming frostbite, taking away the ill-effects of the cold just as is done with frozen fruits. For the plunging into cold water has the effect of drawing out the ice, and of washing it away, and melting the tissues and restoring them to a normal temperature, whereas exposure to heat would simply lead to decomposition. However it be done is no particular concern of the doctor.

896. If the extremity begins to become dark in colour, an incision should be made into it, to let the blood out of it ; the limb is then placed into warm water to prevent the blood from congealing and so failing to run out of the tissues. The flow is allowed to continue till it stops of its own accord. After that an epitheme is applied, using Armenian bole and vinegar blended together, for this antagonizes the injury done. *Pix liquida* is also a good adjuvant to this both at the commencement and at the conclusion.

When the darkness goes on to blackness or greenness, showing that the mortification is increasing, no time must be lost in stopping the process, for otherwise the healthy parts adjoining will become implicated and undergo putrefactive changes which will surely spread on into the interior organs. The measures to adopt under these circumstances are described in the appropriate chapter.

6. HOW TO PRESERVE THE COMPLEXION WHILE TRAVELLING

897. The face should be treated by applying epithemes to it, which are prepared with viscid substances, such as mucilage of fleabane, mucilage of purslane, gum tragacanth in water, gum arabic in water, white of egg, and such things as rusks of the finest wheaten flour dissolved in water, Chritan lozenges.

When the face is exposed to biting winds, or cold or the action of (intense) sun, the measures to be adopted are those given in the section on "Beauty Culture."

Scented face powders of the East are referred to by Burton¹⁰⁴, who specifies one composed of rice-flour or powdered bark of the mango, deodar (*uvaria longifolia*), sandal-wood, lign-aloes, or curcuma (*zerumbat* or *zedoaria*) with rose-flowers, camphor, civet and anise-seed (v. 257).

7. HOW TO COUNTERACT THE INJURIOUS EFFECTS OF THE VARIOUS WATERS, WHILE ON A JOURNEY

898. The traveller is more exposed to illness from the diversity of the drinking water than he is from the diversity of foods. Hence it is necessary to be particular about correcting the bad qualities of the drinking water, and expend every effort in purifying it.

1. Procure the rapid passage of water through the body by inducing sweating.

2. Boil the water, for as we have already pointed out, boiling sometimes clarifies the water and separates off the impurities which are admixed with the intrinsic substance of the water.

3. The best measure is to *distil* the water. This may be done by making a wick out of twisted wool, one end of which is placed in the full vessel and the other into an empty vessel. Water will then escape from the one to the other drop by drop. This is a good way of clarifying water when it is necessary to do so frequently.

Note this original use of the word "distil"; the water passes from one vessel to the other steadily drop by drop. When heat came to be used, the water being placed in an alembic, or nowadays, in a "retort" or "still" (a metal retort), the water also comes over drop by drop. The coming of the water drop by drop gives the name to the process of distilling. Poetically, dew "distils" on the flowers (i.e., drops of water appear on them); mercy "distils." The retort is the representative of the "twisted" wool, the glass vessel having been bent to form the condenser of the water vapour.

It may be noted that the action of capillarity would ensure the purity of the distillate, for salts will only travel a certain distance. Bacteria also will not ascend to the brim of the vessel, except possibly in the case of typhoid bacilli.

When the water is bitter and altogether unwholesome, one should boil it, and add pure sand to it while it is boiling. It is

then distilled over drop by drop by using the wool as mentioned above.

It amounts to the same thing if the water be shaken with clean sand, especially when this material has been burnt in the sun. When the sand has settled, the water will be harmless.

4. Drink wine with the water, for that removes such injurious matter as is of feeble penetrative power.

5. If water is scarce and not attempered, it should be taken with vinegar, especially in summer-time, because that prevents one from drinking too much.

899. Salty water : take vinegar with it, and syrups acutus into which has been placed pulse and various species of myrtle and medlar.

Aluminous and bitter water : take aperients afterwards. It is also beneficial to take wine after it.

Sour water : take sweet things and oily things, mixed with julep afterwards. Chick-pea water, taken previously to the water, will make it harmless before one could wish. The same is true if one eats chick-peas first.

Stagnant and marshy water : these are putrescent. Do not take warm foods before drinking it. Afterwards take astringents made with cold fruits and potherbs, such as quince, apple, and sorrel.

Thick and turbid waters. Garlic should be taken after such waters. Among the reagents which will clear these waters is alum of Yamen (of Arabia).

900. Other things which remove the harmful properties of various waters : onions, because these act on them like a theriac ; especially onions and vinegar ; garlic ; and, among cold things, lettuce.

901. Another good rule in regard to the diversity of waters which travellers are likely to encounter is this : to carry some of the water from his home, to mix with it the earths from the inn in which he has stayed last ; then carry some of the water to the inn to which he goes next, and mix that with the water he has brought ; and go on in this manner until he reaches his destination. Similarly he may take some of the clay (sand) from his own home, and use that to mix with each successive specimen of water, shaking them with it, until it has cleared them.

902. One should be sure to pass all the drinking water through a cloth, in order to make sure there are no leeches or other creatures in it, or any minute particles of evil nature suspended in it. [E.g. incidentally, minute ova !]

It is a good rule also to take a sour rob with one, to mix with the various waters one is likely to have to drink.

8. RULES FOR PERSONS TRAVELLING BY SEA

903. Those who travel by sea often suffer from scotomia and vertigo, and the motion brings on nausea and vomiting, especially during the first few days of the voyage, after which it subsides. It is not wise to allow nausea and vomiting to continue longer than is required for getting rid of superfluities.* It should then cease.

904. *Measures to prevent sea-sickness.* It is justifiable to endeavour to *prevent sea-sickness*. Thus, take fruit such as of quince, maciana, and pomegranate. Parsley seed made into a drink will prevent nausea as long as one lies quite still ; and if one cannot lie still, it soothes the sense of nausea. Absinthe has the same effect.

Among the things which prevent seasickness are : nourishing the mouth of the stomach with tonic acetous substances, and such things as prevent "vapours" from rising into the head. Namely : Lentils in vinegar (or dried and boiled with a little pennyroyal, or boiled till soft and then triturated and dried and kept in an earthen vessel : Aeg.) ; juice of sour grapes ; a little pennyroyal, thyme ; bread broken up in weak and fragrant wine, or in cold water. Thyme is sometimes added to that.

The nostrils should also be smeared over on the inside with white lead (cosmetic) ointment.

Persistent Sea-Sickness.—Avoid all food. Take a little vinegar and honey with water in which thyme has been infused, or pennyroyal water with some fine polenta ; or take some weak fragrant wine, with fine polenta. Take antibilious remedies. (Rhazes).

Simple Precautionary Measures.—(1) Counteract the disagreeable smell of the ship by sniffing at quinces, thyme or pennyroyal. (Aeg.) (2) Do not look at the sea. (ib.) (3) Beware of the drinking water (ib.) (4) Note the diet already mentioned. (5) Have remedies against vermin. Mercury, oil, long birthwort or wearing wool smeared with oil or mercury ensures against lice. (Haly Abbas).

* The first vomitings which occur at sea are often beneficial, and therefore need not be interfered with.



§ 254. When prescribing a "regimen," or programme to be followed by the patient, especially where the ailment is chronic, or liable to become chronic, the following headings require to be considered.

I. *General*.—The conditions regarding Light, Air, the Climate of the place, and the physical environment—place of residence or work ; the dwelling itself. The season of the year.

II. *Special*.—(1) The age and sex of the patient ; (2) The food, drink, and necessary evacuations ; (3) Sleep ; (4) Exercise ; (5) Clothing ; (6) Personal habits : bathing, smoking ; marital life ; (7) Occupation or livelihood ; (8) Mental environment and social conditions.

As regards Light: the importance of free access of light is well-known but is often neglected, and may account for some of the effects met with in the given case. An excess of exposure is equally faulty with deficiency.

As regards Air—impurity of the air constantly breathed; manufacturing towns ; confined rooms, stuffiness of the bedroom because too small, etc.

As regards Climate, ample suggestions are discussed in §181, 188, 305-322.

The importance of considering the Season is freely discussed in 261-273, 280-305. The habits as regards food, exercise, sleep, clothing, etc., must be adjusted according to the season.

Place of Residence.—Here belongs a consideration of the nature of the soil, of the water supply, of the prevailing winds ; the heating and lighting ; the drainage (322).

The dwelling itself.—Here we consider materials of construction, proximity of other dwellings, the aspect of the several rooms, point of compass faced, the colour of the walls in the rooms, the stability of the window-frames ; type of fire-places ; cellarage, etc.

The age of the patient is considered in terms of the periods of life specified in 51. At each period there are certain variations of function and capacity which account both for the phenomena of the illness, and affect the efficacy of different modes of treatment—physical and mental. The sex is necessarily considered.

Food and Drink.—Here it is desirable that the physician should picture the actual meals he is advocating. It is not enough to make out a dietary in the form of a list of things allowed and things forbidden. The foods must be combined. The dishes may often be specified. The number of meals a day ; the place where they are eaten ; the actual time of day chosen ; the time occupied over the several meals ; the quantity taken at a meal ; the kind of cooking—all these things need watching and regulating. The whole

subject of adulteration and contamination of foods must be studied ; the deleterious effect on foods produced by long keeping in shops or in refrigerators, etc. ; artificial ripening of fruits ; artificial methods of preserving foods ; addition of preservative chemicals, etc.

It must here be emphasised that the idea of controlling diets by estimation of calories, and scientific calculation—so much a fetish in many places—overlooks that important personal factor which means so much for the ailing and sickly. “ Man is a living organism, not a mechanism, and can produce a definite amount of protein and carbohydrate from a given quantity of food. . . . In practice the value of a food depends on the physical properties of food-stuffs, but also on the assimilative power of the digestive organs and the personal condition of the individual organs. (Muther).¹³⁴ “ The public are apt to forget that not the quantity of food, but the efficiency of the gastric organs to digest and *assimilate* is the real criterion to go by.” (ib.) Or, as has been wisely said : “ Nature laughs at our scientific food values.”

The actual composition of the meal may be considered from several aspects : the list of all possible articles which can be bought ; the chemical composition of each ; the food-value composition ; the taste or palatability ; the digestibility ; the assimilability ; incompatibilities ; the effect on the bowels and urine ; the personal idiosyncrasies (including anaphylactic actions) ; the relation to temperature of the air, season, age, sex, occupation ; the mode of preparation ; the materials used for cooking (water, steam, butter, margarine, fat, olive oil, etc.) Incompatibilities, both among solid foods, and among beverages, and between solids and fluids taken together or successively.

The action of the bowels must be seen to, and secured, as often it can be, by the proper choice of foods and modes of cooking rather than the random exhibition of various purges and aperients, and by exercise.

Sleep.—Here we must go into :—the time of retiring to bed ; the time of rising ; the duration of sleep ; the kind of sleeping apartment ; the position in bed ; the kind of bed ; the bed-clothes ; the night-clothes ; the nearness to a meal ; the quality of the meal last taken ; the time of day. (Repose taken during the day, relaxation of the mind for the time, from cares, business worries, and domestic anxieties, etc.)

Exercise.—Special exercises may be prescribed :—breathing-exercises, stretching exercises ; gymnastic exercises : regulate time of day, relation to food, amount of clothing at the time.—Here belongs also the question of massage (kneading, stroking, pinching, tapping, beating, vibration of certain parts of the body : lower limbs, upper limbs, breast, abdomen, back, scalp, throat, face, and so on). See 739, sqq.

Clothing.—Adapted to the season ; materials used next to the skin ; loose or tight ; weight of materials used.

Personal Habits.—Prompt attention to calls of nature ; clean-

liness of skin. Smoking. Swimming and sea-bathing. Marital relations may need consideration.

Occupation or livelihood.—This often proves a determining factor if mistakes in advice are to be avoided. The influence which the daily occupation has in the commonest of our habits must never be disregarded. The occupation entails obedience to various rules impossible in many cases; we must also consider whether the occupation is agreeable or painful, or entails the repression of one or other psychical wishes or carries with it restrictions of an ethical or religious or ambitious or social nature.

Mental environment.—This is provided partly by the occupation; it also includes the recreations; the domestic side of life; the social side of life; amusements; company; friendships; leisure, etc.
